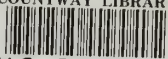


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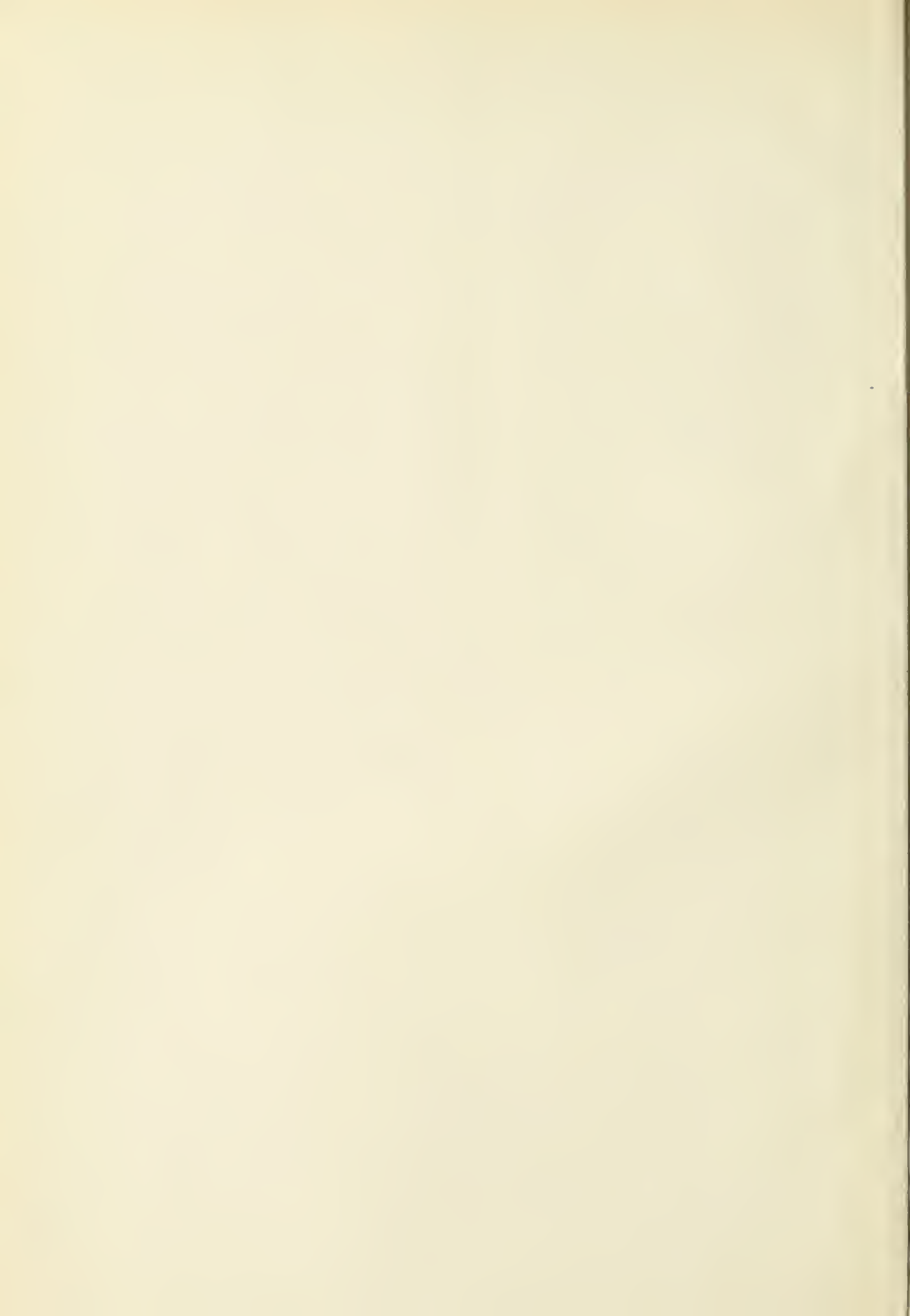






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# THE JOURNAL

*of the*

## Missouri State Medical Association

The Official Organ of the State Association and Component Societies  
Issued Monthly Under Direction of the Publication Committee

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## Missouri State Medical Association

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### THE FIBROID UTERUS

E. D. PLASS, M.D.

IOWA CITY, IOWA

Uterine fibromyomata constitute a considerable medical problem by reason of their frequency. It is estimated that one out of five women in late sexual life has larger or smaller fibroids. Evidently these tumors are related, at least indirectly, to the menstrual function since they seem never to appear before puberty and rarely grow or produce symptoms after the menopause but are increasingly common as the climacteric is approached. This association suggests a hormonal etiology and the ovarian estrogens have been implicated since conditions such as cystic ovarian disease and pregnancy, which produce hyperestrinism, frequently lead to their appearance or to their rapid growth.

Histologically, these uterine tumors are composed of varying proportions of fibrous tissue and smooth muscle, with the latter possibly being secondary. The different response of the fibromyomata to certain stimuli, for example, pregnancy, may be a function of the tissue mixture. A small tumor with a high proportion of muscle tissue will hypertrophy rapidly under the influence of the estrogen excess during gestation and will atrophy with even greater rapidity after delivery. On the other hand, predominantly fibrous tumors are subject to less marked changes in size. The presence of endometrial glands and stroma in the tumor produces an adenomyoma which is rarely distinguishable clinically from simple fibromyomata.

These tumors tend to be multiple, a fact which explains their frequent recurrence after myomectomy or fundectomy. Evidently they develop from single cells or small cell nests situated in the myometrium, but whether these anlagen represent specialized cells or are merely cells which develop an abnormal response to some hormonal stimulus is not known. In any event, the tumors are distinct from the myometrium and are surrounded by a cap-

sule or lymph space which facilitates their enucleation. In all probability, fibromyomata originate in the uterine wall and then follow the path of least resistance as they grow to become subserous or submucous. The lesser frequency of the latter possibly can be explained by the inevitably greater resistance offered to their projection into the uterine cavity. That some fibroids develop near the peritoneal surface is evidenced by the frequent appearance of minute tumors in this location. Fibromyomata appear most commonly in the uterine body but occasionally develop from the cervix when they protrude into the canal and usually become pedunculated. When the tumors project from the outer surface of the uterus in areas (the broad ligament attachments) when there is no peritoneal covering, they become intraligamentous. Rarely a subserous nodule will adhere to a neighboring structure, for example, the omentum, and will later become separated from the uterus to become "wandering." In any situation, the blood supply is probably rather meager, a contingency that may be related to the frequency with which various forms of degeneration appear.

As the tumor grows, the uterine mass becomes enlarged and the cavity generally is lengthened thus increasing the surface area of endometrium. Moreover, the hyperestrinism, which was postulated to explain the tumor growth, produces hyperplasia of the mucous membrane with thickening of that structure except over the nodules that protrude into the cavity. The endometrial hyperplasia not infrequently is so marked as to produce polyps. The ovaries may be enlarged and edematous and may contain follicle cysts.

Because of the uncertain and commonly inadequate blood supply, the fibroid nodules are frequently edematous and may show some type of degeneration (mucoid, hyaline, "red"). More rarely they become calcified in areas or undergo liquefaction necrosis to become converted into cyst-like structures. Infection is rare except in submucous nodules which protrude through the cervical os. Occasionally, malignant degeneration (sarcoma) develops and is associated with rapid growth and

unusual softness of the tumors. Carcinoma, either epidermoid (from the portio epithelium) or adenomatous (from the endocervix or endometrium), is not uncommon but may be masked clinically by the presence of the fibroid tumor mass.

The most common manifestations referable to fibromyomata are uterine bleeding, pressure complaints, obstetric difficulties, leukorrhea and general symptoms.

Uterine bleeding usually manifests itself as prolongation of the menses with an increased amount of flow. Intermenstrual bleeding is uncommon except from polyps, exposed submucous nodules or associated benign or malignant degeneration. The excessive blood loss may be explained by the menstrual shedding of the hyperplastic endometrium from the expanded uterine cavity and by the hormonal imbalance which so frequently obtains. After the menopause, the fibroid uterus is not in itself an acceptable explanation for bleeding although necrotic, submucous nodules occasionally may produce this symptom. More frequently, such bleeding is due to malignant disease involving the cervix or the body epithelium. In any event, postmenopausal bleeding, which evidently originates in the uterus, demands careful investigation.

Pressure symptoms usually are manifest only when the tumors have attained considerable size although occasionally small nodules in special locations, e. g., against the base of the bladder, may produce marked discomfort. More frequently, large tumors, by their weight alone, induce a sense of pelvic pressure or weight. Congestive pain, urinary urgency and frequency and, rarely, obstructive constipation may make their appearance. Backache is not uncommon. In the presence of adhesions to neighboring organs, intermittent "stretching" pain may ensue. Acute discomfort suggests the torsion of the pedicle of a subserous nodule or of "red" degeneration, which usually also are associated with some elevation of temperature and leukocytosis. Dysmenorrhea may be a prominent symptom when the nodules are submucous or when adenomyomata are present.

Obstetric difficulties, such as sterility or the inability to carry a pregnancy to term, may be related directly to the fibroid condition. The association of fibromyomata and sterility has long been recognized but it is not yet known which is primary, although the fact that myomectomy occasionally is followed by conception suggests that the tumors may actually produce the infertility. The expulsion of a previsible baby, which not infrequently occurs in women with fibromyomata, may be due to inadequate decidual formation, to inelasticity of the nodular uterus or to hormonal imbalance. It is rare for fibroids to interfere mechanically with delivery although such a complication may appear when there is a cervical nodule or when a pedunculated subserous tumor gravitates into the true pelvis. On the other hand, women with fibroid uteri may present uterine inertia with prolonged

parturition due to inefficient contractions and may have third stage difficulties with postpartum hemorrhages.

Leukorrhea is rarely a complaint except when there are degenerating nodules or when a submucous tumor protruding from the cervix has become infected and necrotic.

General symptoms, except hypochromic anemia resulting from the repeated blood loss, are uncommon. The older idea that fibromyomata are associated with, and probably responsible for, cardiac damage is scarcely tenable and largely has been abandoned.

The diagnosis of fibromyomata is commonly made on bimanual examination when the uterus is felt to be represented by an enlarged, nodular or symmetrical mass which is characteristically hard. Small, submucous tumors may escape recognition by palpation but can be recognized in films taken after the injection of a radiation-opaque medium into the uterine cavity. When the tumor is symmetrical, and especially when it is soft, pregnancy must be considered; the biologic pregnancy tests should be utilized to effect differentiation.

When bleeding is the prominent symptom, the differential diagnosis should involve consideration of the other common causes of blood loss from the uterus as functional menorrhagia, especially in the premenopausal period; abortion in one of its various manifestations, and malignant disease, particularly in those near the menopause and after the cessation of regular menstruation. It is never wise to hazard a diagnosis of fibroids until after careful pelvic exploration has shown the uterus definitely to be enlarged. In doubtful cases, diagnostic curettage may reveal another etiologic factor which can be corrected by simple therapy.

The presence of a pelvic mass, even though it evidently occupies the position of the uterus and is nodular, does not necessarily make the diagnosis. Ovarian tumors, pelvic endometriosis and uterine carcinoma may cause confusion. A distended bladder or a normal pregnant uterus, particularly when it presents Piscacek's phenomenon (firm contraction of an isolated portion of the uterine muscle), may lead to diagnostic errors. Unless care is used the body of a completely retroverted uterus may be mistaken for a fibroid nodule.

The treatment of uterine fibromyomata depends upon various factors such as the age of the patient and her desire for future children, the location, size and rate of growth of the tumors and the presence of complicating pelvic disease. In general symptomless tumors need no treatment; they probably will regress in size or disappear after the menopause. The advisability of active treatment by radiation or radium or by surgical intervention will depend upon review of the factors mentioned previously. Medical treatment usually is ineffective although the exhibition of oxytocic drugs (pituitrin or ergot) may be effective temporarily in controlling excessive bleeding and calcium may have some value.

Rest obviously is indicated during periods of menorrhagia and an icecap over the lower abdomen may help. The secondary anemia produced by the excessive bleeding should be combatted by the administration of an adequate diet with plenty of protein together with some form of iron and with vitamin B.

Radiation by roentgen ray or radium, preferably the former, is useful in women near the menopause who have relatively small tumors that are not pedunculated. It is, however, generally thought to be contraindicated in tumors larger than a three months pregnancy, in pedunculated tumors, in women under 40 years of age and in those who present evidence of associated disease of the pelvic organs. In any event, curettage should precede the irradiation in order to eliminate the possibility of malignant disease or of pregnancy. These agents probably act upon the ovaries and cause regression of the fibromyomata by eliminating the production of the estrogenic hormone through the development of an artificial menopause.

Myomectomy is indicated in young women who wish to retain their childbearing functions. Multiple tumors may be removed but the results are apparently better when only a single nodule is present. There is always a considerable chance that additional fibroids will appear later and demand a second operation.

Vaginal hysterectomy may be performed but in general is not so satisfactory as the abdominal operation. The operation is more suitable for the removal of small tumors, which ordinarily do not produce symptoms indicating treatment of any sort. Larger uterine masses can be extirpated by morcellation through the vaginal approach but the procedure may be technically difficult. Complicating pelvic disease offers a distinct contraindication to this type of operative attack.

Abdominal hysterectomy has the great advantage of permitting direct attack upon associated pelvic lesions and, therefore, is employed most commonly. Decision as to the performance of the total or subtotal extirpation of the uterus will depend upon the experience of the operator, but, if the latter is chosen, it is generally recommended that the retained cervix be treated separately unless it appears quite normal. Discussion of the advisability of anchoring the round ligaments to the vaginal vault or to the cervix has little point since there is little evidence that one technic is definitely superior to the other. The ovaries should be retained or removed depending upon their condition and the age of the patient.

#### CONCLUSION

Uterine fibromyomata may produce various symptoms depending upon their size, location and condition. Symptomless tumors need no treatment but the others should be attacked by radiation or operation according to well established principles based upon experience and reason.

University Hospitals.

## DIABETES

### ADVANCES IN TREATMENT

CYRIL M. MacBRYDE, M.D.

ST. LOUIS

The physician today has a greater responsibility in the management of diabetic patients than ever before. Better understanding of the pathological physiology of the disease has made it more imperative to analyze each patient individually rather than to use a standardized treatment for all. Furthermore, two innovations in therapy have made it necessary to modify or discard some of the older methods. The first of these is the wider use of higher carbohydrate diets which have been found to be beneficial to many patients, although certainly not to all. The second is the use of modified, slow acting forms of insulin, particularly protamine-zinc insulin. This paper is concerned with the practical aspects of diabetic management with particular reference to the use of protamine-zinc insulin and the proper carbohydrate allowance.

It has been established that many diabetic patients experience definite improvement in health and greater ability to utilize carbohydrate when relatively large amounts of carbohydrate are allowed in the diet. Until recent years the treatment of diabetes has been conducted upon the principle that strict carbohydrate limitation was necessary. The theory was that the pancreas thereby was put at rest and allowed to recover some of its insulin-manufacturing efficiency. As a matter of fact, actual gains in carbohydrate tolerance frequently are noted after carbohydrate restriction and it is common knowledge that a "free diet," in which excessive carbohydrate is ingested, usually leads to rapid deterioration in the patient's condition and to increasingly severe diabetes. One is at once, then, confronted with the dilemma of deciding whether to give large amounts of carbohydrate to stimulate the patient's pancreas to make more insulin, or give smaller amounts to give the pancreas a rest.

#### HIGH VERSUS LOW CARBOHYDRATE

A review of the history of the dietary management of diabetes reveals that the greatest students of the disease have differed widely in their answers to this question. Naunyn<sup>1</sup> found it necessary to limit carbohydrate to small amounts. The principles advocated by him were widely followed until Von Noorden,<sup>2</sup> Falta<sup>3</sup> and others emphasized that in their oatmeal and "mehlfruchte" "cures" more generous carbohydrate often led to gains in tolerance. But this was not a new idea; Donkin as early as 1874 used a milk treatment which may have contained from 200 to 250 grams of carbohydrate, ap-

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From the Washington University School of Medicine, Barnes Hospital and St. Louis City Hospital.

parently with good results, and von Düring used a "rice cure" in 1868.

The lowest carbohydrate diets were introduced by F. M. Allen<sup>4</sup> who observed that partially depancreatized dogs lost tolerance with high carbohydrate intake but gained tolerance with low carbohydrate. Patients seemed to respond in similar fashion and the "Allen era" of treatment was characterized by the strictest possible limitation of carbohydrate and with considerable success.

Next came Newburgh and Marsh<sup>5</sup> and Petren,<sup>6</sup> the advocates of high fat, whose careful studies revealed improvement and apparent gains in tolerance with a quite opposite type of diet.

Insulin was introduced into practice in 1922. Soon many workers were impressed with the opportunity of allowing more and more carbohydrate and the old principle of "sparing the pancreas" was largely forgotten. The leaders in the movement toward higher carbohydrate<sup>7</sup> found that many patients showed truly remarkable gains in general health and strength and improvement in tolerance when given the more liberal diets. Certain valuable points have been established by the demonstration that many patients do better with higher amounts of starches and sugars in their food but, unfortunately, two serious consequences have followed this trend: (1) excessively high carbohydrate and extremely low, inadequate fat allowances are now insisted upon by some workers; (2) the fact that many patients do better on lower carbohydrate diets and lose tolerance with high carbohydrate too frequently has been overlooked.

#### THE MIDDLE ROAD

Two experienced students of the disease have expressed themselves as follows: Wilder<sup>8</sup> advocates diets ranging from 121 to 167 grams in carbohydrate and fat from 95 to 210 grams and believes that increasing protein and carbohydrate and limiting fat has not given impressive results. His reasons are: (1) Relatively high fat diets are satisfying, palatable and provide adequate nutrition. (2) Growth and development of children and the resistance of both adults and children to infection has been satisfactory. (3) High fat does not seem to decrease life expectancy or to lead to arteriosclerosis. (4) Higher carbohydrate diets do not simplify dietetic procedure but necessitate more careful measurements. (5) Higher carbohydrate usually calls for larger insulin dosage. In only a small proportion of cases is it true that insulin need not be increased.

Joslin<sup>9</sup> believes that carbohydrate of 150 grams and fat about 100 will lead to longer lives for diabetic patients but doubts whether raising the carbohydrate to 200 or 300 or lowering the fat to 50 is advisable. To quote Joslin directly: "I believe more insulin is required on a high carbohydrate diet than upon a diet containing 130 to 150 grams carbohydrate, and fat 80 to 100 grams, that it is

easier for a patient to live on such a (the latter) diet and that he is less apt to break it."

It is apparent that the diets advocated by Wilder and by Joslin are essentially a compromise between the two extremes.

#### FIT THE DIET TO THE PATIENT

My own studies have led me to a greater individual analysis in dietetic management. It has seemed important that some patients actually gained tolerance with high carbohydrate, sometimes taking less insulin, while others lost tolerance when too much carbohydrate was included in the diet. If the high diet was always used many patients would be made worse; if the low diet was always used, many patients would be deprived of the opportunity for improvement. If the conservative compromise diet was used on all patients latent possibilities of gain in tolerance might be concealed or in some cases loss of tolerance even might be caused.

Studies performed in the Metabolism Department of Barnes Hospital and in the Washington University Clinics and St. Louis City Hospital Clinics have supported the conception that, roughly speaking, diabetic patients can be divided into two general classes: (1) relatively insulin-sensitive and, (2) relatively insulin-resistant. The methods of study are given in detail in previously published articles.<sup>10</sup> These studies now have extended over a period of seven years. The relatively insulin-sensitive patient usually had developed diabetes in childhood. He is unstable, exhibiting hypoglycemia or hyperglycemia following relatively minor incidents and tends toward the easy development of acidosis and coma. His glucose equivalent is high, one unit of insulin usually metabolizing from one to four grams of carbohydrate. Such a patient seldom shows a true gain in carbohydrate tolerance. He responds like a partially depancreatized animal. High carbohydrate is apt to cause loss of tolerance or, at best, does not affect the tolerance but requires more and more insulin until the patient is in a highly unstable state.

The relatively insulin-resistant patient, on the other hand, usually has diabetes developing after the age of 30. He is apt to be obese and often has hypertension. He is relatively stable with much less tendency to hypoglycemia or to acidosis. His glucose equivalent is low, usually less than one gram; often he metabolizes only a few tenths of a gram of glucose per unit insulin. Such patients frequently show remarkable gains in tolerance with high carbohydrate diets.

From the practical standpoint of treatment these facts can lead to only one conclusion: the physician should find, if possible, the optimum diet for each individual patient. Such a diet must supply the necessary calories in palatable form; it must permit the development of the greatest possible carbohydrate tolerance and must enable the patient to use a minimum amount of insulin. The physical char-

acteristics and the response to insulin will serve in many patients to suggest which type of diet will be best. When doubt exists, every patient deserves a trial of the higher carbohydrate diets. The average patient should have from 140 to 160 grams. The carbohydrate may be increased by 20 grams at a time, reducing the amount of fat proportionately to keep the caloric total the same. The patient should be allowed more carbohydrate gradually, waiting at least three or four days or better a week or more between each increase, raising the insulin dose as necessary to keep glycosuria below 15 grams daily and to keep the true blood sugar between 100 and 160. After several weeks trial on higher carbohydrate, the answer usually will be clear. The higher carbohydrate diets of 180 and 200 grams and more should be permitted only for those who do well on them. For those who fail to gain tolerance or who lose tolerance with the higher levels, the carbohydrate should be diminished slowly with proper insulin reductions until the optimum level is reached. Why not give each patient the diet which suits him best? With sufficient individual attention I believe one can determine whether the individual patient will respond better to higher carbohydrate, moderate carbohydrate or limited carbohydrate. It requires more work on the part of the physician and a more careful analysis of each case but it is much more logical than trying to make all patients fit into some preconceived pattern of dietary management.

#### SLOW ACTING OR DEPOT INSULIN

A diabetic patient needs insulin injections because his pancreas furnishes him with too little, because something interferes with the action of his own insulin or because both factors are operative. Ideal insulin treatment would provide for the utilization of the increase in blood glucose after meals (exogenous) and for the glucose supplied to the blood and tissues by the liver (endogenous). This probably would mean that a small constant supply of insulin would be provided with sudden larger amounts being furnished in response to each meal. No perfectly satisfactory way to imitate the activity of the normal pancreas has been found as yet. Regular insulin such as has been used for years meets one part of the requirement. It takes care of the meals; but during the night the patient with severe diabetes begins to break down glycogen and protein and excrete it as glucose and nitrogen and tends to develop acidosis. One might keep the blood and urine sugar reasonably normal during the day with two or three doses of insulin before meals but the slow-acting factor necessary to inhibit glycogenolysis is missing and marked glycosuria during the night, with a high morning blood sugar, is the rule. Protamine-zinc insulin has been in use since 1937 and has provided the slow insulin action so long desired. As yet, however, no completely satisfactory way to combine the effects of

regular insulin and protamine-zinc insulin has been discovered. Hagedorn<sup>11</sup> of Copenhagen introduced protamine insulin after discovering that this precipitated form of insulin was insoluble at the pH of body tissues and thus was slowly absorbed and gave prolonged activity. Scott<sup>12</sup> of Toronto found that zinc, when added to protamine insulin, prolonged its effect.

Nearly all of my patients now are receiving protamine-zinc insulin, either alone or combined with regular insulin treatment. I am convinced that they are better controlled than they could be with regular insulin and that insulin reactions are much less frequent. The chief value of protamine-zinc insulin has been that it enables much better control of the long fasting period during the night. The number of injections is reduced greatly since most patients are controlled with a single dose before breakfast.

Many physicians have expressed dissatisfaction with protamine-zinc insulin. In most cases I believe unsatisfactory results indicate a failure on the part of the physician to utilize protamine-zinc insulin properly. More is being learned about its use every day. Old habits of thought concerning diabetic management must be discarded if fullest use is made of this slow-acting insulin which is deposited in a depot in the body and exerts some effect as long as from forty-eight to seventy-two hours from a single injection. The effect of a single dose of regular insulin is over in about four hours. Regular insulin usually works best if injected from fifteen to thirty minutes before meals. When protamine-zinc insulin is given, its relation to any particular meal is not important. Although a single dose of protamine-zinc insulin seems to exert its maximum effect from eighteen to twenty-four hours after injection, when repeated daily injections are given the effect becomes more or less constant. The fact that hypoglycemia is apt to occur in the early morning hours when protamine-zinc insulin is given in excessive doses before breakfast does not prove that its action is strongest at that time. Most people eat three meals a day, at about 7 or 8 a. m., 12 noon and 6 p. m. In other words, all eating is done in eleven hours and fasting for thirteen hours. An insulin which exerted a constant effect therefore would be apt to cause hypoglycemia in the early morning hours when food was not being absorbed. This has been proved satisfactorily in a number of cases by demonstrating that the early morning blood sugar was lowest whether the protamine-zinc insulin were given before breakfast, before supper or upon retiring.

The first effort therefore should be to give it when it is most convenient. This is usually before breakfast. The major objective should be to give enough to keep the night urine approximately sugar-free but not enough to cause hypoglycemia. Protamine-zinc insulin begins to act immediately upon injection but its action is relatively slight and slow, therefore, glycosuria may occur after meals

even though the night period is well controlled. When the diabetes is not severe a single dose of protamine-zinc insulin will, however, serve to keep the blood sugar within approximately normal limits throughout the twenty-four hours. If a small amount of sugar is spilled after breakfast, lunch or supper and the night urine is sugar-free, a simple maneuver with the diet is frequently successful in preventing the hyperglycemia after the meals. Most physicians have divided the daily carbohydrate intake of diabetic patients into one third at each meal, or one fifth at breakfast and two fifths at lunch and supper. In many cases these habits must be discarded and the time of meals and the amounts of carbohydrate adjusted to fit the slow-acting insulin. Diabetic patients, like many normal people, appreciate a snack at bedtime. Most patients receive some slowly absorbed carbohydrate at 9 or 10 p. m. as an apple, some milk or some bread and meat or cheese. Thirty or forty grams of carbohydrate taken from the regular three meals is thus shifted to the night absorptive period and food absorption is made more uniform to balance the uniform, prolonged insulin action. A diet containing 160 grams carbohydrate could be divided into 40 grams at each of four feedings, for example, or one of 180 grams into three feedings of 50 and a night feeding of 30.

When four feedings are employed and the patient still exhibits glycosuria during the day and becomes sugar free during the night, raising the protamine-zinc insulin dose usually will cause early morning hypoglycemia. Occasionally giving the injection before supper or upon retiring will solve the problem. More frequently it is necessary to supplement the protamine-zinc insulin control with a dose of regular insulin given before breakfast. Let me illustrate this with a hypothetical case. With protamine-zinc insulin 30 units before breakfast, 10 grams are spilled during the morning, 10 in the afternoon, 5 after supper, but none after 10 p. m. If one gives in addition 10 units of regular insulin before breakfast to such a patient, he usually will become practically sugar-free throughout the day as well as the night. The regular insulin is given first, in a separate site, then the needle is changed and the protamine insulin given with the same syringe.

In using protamine-zinc insulin it is important not to increase the doses too rapidly. One must remember that the effect of a single injection lasts into the third day; therefore usually it is best not to increase the dose until the effect of a certain dose has been watched for at least three days. As much as 50 units, or rarely 60, may be given in a single dose before breakfast. When more insulin is needed, it usually is best to add it in the form of regular insulin. When an acute infection or an operation requires a temporary increase in the insulin requirement, one may continue the usual dose of protamine-zinc insulin and add small doses of regular insulin during the day as indicated. As

recovery occurs the regular insulin may be eliminated gradually and the patient is returned step by step to his basic protamine-zinc insulin control.

#### SUMMARY

The newer knowledge of diabetic regulation offers much more to the patient and places greater responsibility upon the physician. It is necessary to replace old habits of treatment with newer, better methods. The physician should: (1) fit the diet to the patient using low, moderate or high carbohydrate, whichever leads to maximum carbohydrate tolerance; (2) strive to utilize more efficiently the new slow-acting insulin.

Barnes Hospital.

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#### REPORT SULFAPYRIDINE REDUCES DEATH RATES IN FORMS OF MENINGITIS

A marked reduction in the death rate from meningitis (inflammation of the membranes enveloping the brain and spinal cord) due to the pneumococcus (the organism causing the most common form of pneumonia) and also the condition when caused by the *Haemophilus influenzae* (a small rod shaped germ formerly thought to be the cause of influenza) through the use of sulfapyridine, a derivative of sulfanilamide, or its sodium salt or both, is reported by Josephine B. Neal, M.D., Emanuel Appelbaum, M.D., and Henry W. Jackson, M.D., New York, in *The Journal of the American Medical Association* for December 14.

The death rate in pneumococcal meningitis was 100 per cent in the experience of the three New York physicians, while in the influenzal meningitis the rate was more than 95 per cent. In their report in *The Journal* the three physicians present a series of thirty cases of pneumococcal meningitis with ten recoveries and twenty-nine cases of meningitis due to *Haemophilus influenzae* with fourteen recoveries. A specific serum also was used in most cases.

"An endeavor to find a satisfactory method of treating meningitis due to *Haemophilus influenzae*," the three authors declare, "is particularly important, since for the past several years there has been a sharp increase in the incidence of this disease."

## TREATMENT OF THE ANXIETY STATES

JOHN M. SARTIN, M.D.

SPRINGFIELD, MO.

The steady increase in the incidence of cases of anxiety neurosis within the last two decades is recognized generally. They are by far the most frequently encountered neurosis in the work of the general practitioner and make up about 60 per cent of the cases seen by the psychiatrist in private practice. Fortunately, they are also the most amenable to treatment and when properly handled show a gratifying response to therapy. The increase in this type of reaction unquestionably is related properly to the increasing tempo and complexity of modern life with its threats to individual security and the frustration of instinctual strivings that go with a highly competitive existence. One writer recently referred to anxiety as the "American disease."

From a clinical point of view these patients show a picture of anxious apprehension. They are tense and uneasy, given to grave forebodings and suffer from insomnia often related to frightening dreams and the inability to relax properly. They show evidence of muscular tension in their facial expression and usually sit on the edge of the chair, grip the arms with moist palms and look at one through dilated pupils. The complaints which bring them to the physician usually are palpitation, choking sensations in the throat, feelings of constriction in the chest, vague cramps and pains in the abdomen, mucous colitis, frequency of urination, digestive disturbances of various kinds and always the fear of serious disease, usually goiter, tuberculosis, heart disease or cancer.

The course may consist of a constant and increasingly uneasy, tense and apprehensive state or there may be recurring anxiety attacks with only a smoldering undercurrent in the interim. The patient is "under steam" in any event and either may express his anxiety continually in symptoms of sympathetic overactivity and psychomotor tensions or "pop off" at intervals in a major display.

While pure anxiety reactions are encountered frequently, it is not unusual to find a mixture of hysteroid, obsessional, neurasthenic and depressive features. Also there is often an element of anxiety in cases of schizophrenia and other major psychoses. The treatment of anxiety per se, however, is the same wherever it is found.

Cannon's work on the physiological changes accompanying the emotion of fear supplies the basic principles for the understanding of these cases. The classical description is that of a preparation for "fight or flight" and our primitive ancestors utilized these changes to serve these ends. Now of course one cannot solve his problems by fighting or running away and unexpressed tension develops which manifests itself in anxiety symptoms. Under the emotion of fear the gastrointestinal movements are

stopped and digestive secretions are inhibited. Increased adrenalin is secreted, the pulse is accelerated, the blood pressure rises, muscular tone is increased and in general metabolic processes are altered in the direction of maintaining the highest level of efficiency and the organism is on the alert, expectant and tense. Emotional stimulation of the sympathetic-adrenal system is useful for immediate physical struggle but otherwise it may be deeply disturbing. While the sympathetic-adrenal system is organized for generalized diffuse action it may exert its influence excessively on one organ or function. Examples of this are the so-called "irritable heart" and emotionally produced dyspepsias.

Whether the fear is one of physical attack, impending financial disaster or unattained ambitions makes no difference in the reaction of the organism. The symptoms are the same. When one sees symptoms of anxiety one knows they mean fear—a fear resulting from frustration of some of the instinctive strivings of the personality. Anxiety really signifies a thwarting of the "heart's desire" whether it be ones sex impulse, ego-drives, artistic yearnings, vocational aims or social adaptability. Frustration of these primitive drives brings a feeling of insecurity, and insecurity leads to fear of failure and hence anxiety. This reaction has been described aptly as "a circle of worrisome thinking centering about a point of fear."

The autonomic visceral functions are the strings on which the melody of anxiety is played, so one finds that the presenting symptom of the anxiety neurotic patient is usually the result of some sympathetic imbalance. The anatomical basis for this association between the instinctual life of the patient and the autonomic nervous system has been demonstrated fairly well. The existence of a sympathetic center in the hypothalamic region is accepted by neuro-anatomists and projection fibers from this area to the cerebral cortex as well as to lower levels have been demonstrated.

For some reason which is not clear there seems to be a lowering of the threshold of sensory appreciation in these cases so that certain visceral functionings which usually go on without one's awareness become subjectively appreciated. Also, there is a tendency for smooth muscle spasms which are uncomfortable and alarming to the patient. One then finds patients for the first time in their lives aware of the pulse in their extremities, the contractions of their stomach and bladder and the beating of the heart. In their attempts to find an explanation for these annoying symptoms they begin to suspect the existence of some grave somatic disease. If they have palpitation, they may fear heart disease; if they have pylorospasm they may suspect ulcer or cancer of the stomach. Perhaps some of their relatives or friends have died from these conditions and on reflection they recall that they had some of the same symptoms. These suspicions frighten the patient and the more fear that develops the more marked the anxiety symptoms become and a vicious

circle is set up which often brings the patient to the physician in a state of panic.

While the hysteric patient transforms anxiety into symbolic symptoms and thus frees himself from tension, the true anxiety neurotic is deprived of this escape mechanism and has "to face the music" as Segal says, "a restless, haunted creature in a rapidly moving, relentless world, surrounded on all sides by endless provocateurs."

Now obviously the first thing necessary is a complete physical examination because the patient is subsequently going to have to be reassured as to the absence of serious somatic disease and his willingness to accept this will depend in large measure upon the thoroughness with which he has been examined and the confidence he has in the examiner. Occasionally a thorough examination and the assurance that his symptoms are not evidence of serious disease will cure him, but usually not. If improvement of a permanent nature is expected, it is obligatory that the underlying dynamic factors be investigated and discussed.

In approaching the genetic factors behind the reaction remember one is looking for frustration and insecurity; it is always there and will be found in the fields of sexual expression, self assertion and personal security, social relationships or others. It may lie largely in one, be a mixture of two or involve several.

More progress is made by leading the patient through indirect questioning to the discovery of the cause or causes than by trying to get him to accept the physician's interpretation of it. Treatment begins with investigation of the initial attack and dates are important in leading the patient to see the relationship between the development of his symptoms and specific life situations.

When the dynamic factors behind the reaction have been uncovered and correlated, the patient is ready to receive a formulation of his illness from the physician. This should be an explanation in simple understandable terms of the role of the emotions in producing disturbances in the functioning of the autonomic nervous system and how his symptoms have grown out of a reaction of frustration and fear. The degree of technical detail one uses in this formulation depends upon the intellectual level and educational training of the patient. For instance, the formulation given a teacher of biology would of necessity be entirely different from that given an ignorant farm laborer. In each case, however, the attempt is made to give an understandable explanation of the symptoms in terms of body functioning which the patient can accept.

Quite often the understanding of the genesis of the symptoms is all that is necessary and the patient will see the obvious implications and make his adjustment unaided. When the frustrating cause is still active, however, they usually require aid in either correcting it or in learning to live with it.

One of the most frequently found causative situations is sexual frustration. Freud originally felt

that all these cases were due to such. Sexual frustration develops in long engagements when much is seen of the other party, when excessive petting occurs and is not followed by relief of tension through intercourse. The delayed age of marriage resulting from recent economic conditions as well as the conflict between pursuit of careers and domestic inclinations in young women today are frequent sources of frustration. In married people coitus interruptus; the fear of pregnancy and distorted ideas of sexual hygiene may prevent adequate sexual relief. In the unmarried the situation is a delicate one. I do not feel that the physician has a right to prescribe conduct in matters involving moral principles. I usually try to show them how their handling of the problem has affected them adversely and leave it to them to decide what to do about it. In cases where coitus interruptus or fear of pregnancy are factors, the use of a more satisfactory contraceptive method may be all that is needed. In some cases of relative frigidity or impotency in the marital partner, simple instructions in sexual hygiene are needed. In other more marked cases, more active therapy is necessary. In a more general sense sexual frustration manifests itself as an unsatisfied need for love, affection, sympathetic understanding and protection or an object on which to bestow these things. In this sense, one finds it in the child who is starved for affection, in emotionally immature persons who have been unable to emancipate themselves from parental ties and in those who have been deprived of normal love outlets through death or other removal of the love source or the love object. Our patients differ in their needs for the giving and receiving of affection and love and this factor always must be evaluated in every case.

When the point of frustration is economic insecurity, unattained ambitions, fear of social disapproval or vocational frustration, the situation sometimes cannot be altered and the individual must be led to develop a philosophical acceptance of it and adjust himself to it by marshaling his abilities to a better advantage, by lowering his standards and goals of personal achievement or by discovering other avenues of sublimation which are more consistent with his equipment and the situation in which he finds himself.

In the differential diagnosis of these cases two pitfalls must be anticipated. One is the diagnosis of ulcer, gallbladder disease, appendicitis and gynecological disorders of a surgical nature; and the other is hyperthyroidism. Many of these patients bear mute evidence on their abdomens of the surgical insults to which they have been subjected unnecessarily. Such treatment not only fails to help the patient but invariably makes him worse. In the case of hyperthyroidism, I previously have emphasized in another paper that one may add an endocrine handicap to an individual who already is handicapped emotionally when thyroidectomy is performed without clear cut indications. These

cases also must be separated clearly from cases of neurasthenia or the type of case Kinsella has designated as "hyposthenia." Not only is the cause and symptomatology different but the treatment differs also.

In the handling of these cases it is essential that the patient be led to assume his share of the responsibility in his treatment and not expect the physician to perform miracles for him.

Sedatives and antispasmodics are useful but should be given only after the patient has received a formulation of his illness and understands that the drug is being prescribed merely to take the edge off his unpleasant symptoms and to make him more comfortable until the causative factors can be brought into adjustment with the personality and that it is not expected to cure him. It is true that these patients are quite suggestible but suggestion only helps them temporarily. In certain cases planned suggestion or even hypnosis is helpful in the beginning of treatment to control particularly annoying symptoms, but as a rule these methods are best avoided. My personal preference in sedatives is small doses of barbitol at frequent intervals, usually from 1 to 2 grains every 2 to 3 hours. Atropine may be added to this if indicated.

Exercises in muscular relaxation according to the method of Jacobson help in controlling tension and favor sleep and, what is probably more important, give the patient a definite, tangible part in his own treatment and help him to learn to assume his share of responsibility in the case. It is not sufficient simply to tell these patients to relax; they must be shown how to do it. I am using relaxation exercises more and more in all cases in which tension is a factor.

These patients need lots of reassurance and should be advised of the probable recurrence of anxiety attacks for a while after the causative factors are eliminated. They should be prepared for them so they will not become frightened or discouraged when they occur.

Apparently there is such a thing as the development of what might be called physiological habits and when an individual had lived in a state of fear and tension for a sufficient time the autonomic reaction patterns become more or less fixed and may persist for a while after the causative conditions are eliminated. In long standing cases one finds the development of a chronic hypochondriacal reaction with a fixation of the preoccupations on the body processes and a well entrenched, rut formation which is most difficult to treat.

These cases are rightfully the responsibility of the family physician and usually can be handled by him quite adequately provided he is willing to devote the necessary time to an investigation of the dynamics of the case. These cases never can be worked out in less than two to three hours and usually several interviews are required. If the physician cannot give this amount of time then, in justice to the patient, he should not attempt to treat

him as inadequate treatment and understanding are worse than no treatment and are the chief causes of chronic psychiatric invalidism in these cases.

#### SUMMARY

The keystones of treatment are:

1. A careful and complete physical examination.
2. A formulation of the illness worked out with the patient and presented in clearly understood terms of body functioning with the avoidance of such obscurities as "it's all imagination," "buck up and take it," "use your will power."
3. Understanding and correction of the sources of frustration or adjustment to them.
4. Efforts to reduce and control tension by the careful use of chemical sedatives, relaxation exercises, reassurance and the repeated explanations of the mechanism of the illness.

Most of these cases do not require formal psychoanalysis or any specialized psychiatric technics, but simply time, common sense and the confidence of the patient.

Inadequate treatment is worse than no treatment and a physician who handles these cases on a superficial basis should realize that he is probably contributing to the development of a chronic invalidism and a source of exploitation for the quacks and cultists who hover on the outskirts of the profession.

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#### MEDICAL EDUCATION CONGRESS DATE SET

The Thirty-Seventh Annual Congress on Medical Education and Licensure, conducted under the auspices of the Council on Medical Education and Hospitals of the American Medical Association, will be held at the Palmer House, Chicago, February 17 and 18, *The Journal* of the Association announces. During the Congress special consideration will be given to the relationship of the medical profession to national defense.

## THE APPLICATION OF GYNECOLOGICAL ENDOCRINOLOGY TO GENERAL PRACTICE

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While conducting the refresher course in obstetrics throughout the state two years ago, many requests were received for the presentation of various obstetrical and gynecological problems that could not be included on the program because of the lack of time. These have been cataloged and it is hoped that eventually each one can in some way be given due consideration.

In checking the record of these requests it was found that there was a greater demand for the subject I am presenting than any other. Therefore, the object of this paper is to try to give an analysis of the current concepts of that phase of endocrinology which is directly applicable to gynecological problems. A tremendous amount of investigative work has been done in recent years and reports on most of it may be found in the current literature. However, much more must be done, particularly in the field of clinical research, before the situation can be clarified sufficiently to warrant the establishment of definite clinical procedures. There have been so many conflicting reports on the effects produced and results obtained from the use of various endocrine products in gynecology that one sometimes wonders if there is a logical approach to its clinical application in general practice. Nevertheless, it has been found that the use of certain endocrine products is indicated in some types of cases and when used properly have produced gratifying results. Although the scope of knowledge is becoming progressively greater, one still must sound a word of warning in favor of a definitely conservative attitude toward the employment of this type of medication, at least, until it is possible to establish a more definite rationale of treatment than that which exists at the present time.

Gynecological endocrinology means the study of those conditions peculiar to women that are due to some type of alteration or alterations in the functional relationship of the glands of internal secretion. The ovary, pituitary and thyroid may be responsible directly or indirectly for many of the clinical symptoms observed in gynecological cases.

Without the facilities of a completely equipped laboratory it is impossible to determine scientifically just where the fault lies. This requires a careful analysis of the various hormone contents of the blood and urine which may have to be repeated frequently and at regular intervals before one can decide definitely the type and extent of the existing endocrine deficiency or deficiencies. Even when facilities are available the cost of employing them

is so great that they are not obtainable for the average patient.

Because there still remains so much to be learned about the clinical application of endocrinology, comparatively few facts have as yet been definitely established. Therefore, treatment for these conditions is largely empirical and must remain so until additional research has provided sufficient information upon which to base more definite therapeutic criteria.

A rational treatise of the conditions to be considered in this paper will be presented in conjunction with the hormone that is usually responsible for the clinical picture. But before going into this, there are certain rather well established observations that are worthy of comment.

Because normal menstruation is entirely dependent upon a normal functional relationship between the various endocrine glands, certain menstrual changes may be noted in most cases of endocrine dysfunction. Hence a careful inquiry into the menstrual history is absolutely essential in every case. The details of the history often will give more valuable information and a more accurate insight into the type of gynecological condition present than can be obtained by a careful physical and pelvic examination. However, the examination must be made in order to rule out the presence of organic pathology.

While taking a history, certain possibilities should be kept in mind. As Urdan<sup>2</sup> has explained, menstruation implies a regular recurrence of bleeding from a premenstrual endometrium in contradistinction to the type of regularly recurring bleeding that may come from an endometrium which is not in a premenstrual phase. When premenstrual changes precede bleeding a corpus luteum has been formed and pregnancy could have occurred, whereas in cyclic bleeding ovulation has not occurred and consequent formation of a corpus luteum has not taken place. This type of menstrual bleeding may recur regularly and should be suspected in those women who have never used any form of contraceptives and still have not conceived.

The hormones primarily responsible for menstruation originate in the anterior lobe of the pituitary gland and the ovary. The thyroid and pancreas also must be closely related to the menstrual cycle because abnormalities in the function of either of these glands may lead to alterations in the menstrual cycle. In fact all the glands of internal secretion may give rise to menstrual disturbances providing their dysfunction is sufficiently pronounced.

The hormones involved in menstruation are the follicle-stimulating and luteinizing hormones of the anterior lobe of the pituitary and the follicular and corpus luteum hormones of the ovary.

It is believed at the present time that the anterior lobe of the pituitary supplies the stimulus necessary for the initiation of the menstrual cycle since both the follicle-stimulating and the luteinizing hor-

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mones are essential in the production of cyclic changes taking place in the ovary. They act in sequence, first by follicle stimulation then by the production of luteinization. Their actions overlap since follicle stimulation predominates until ovulation occurs, then the luteinizing effect upon the corpus luteum assumes the dominant role. Both hormones are essential for the production of the menstrual cycle and there must be a definite quantitative relationship existing between them if the menstrual cycle is normal. If luteinization is defective, excessive proliferation of the endometrium may occur. This in turn may give rise to a sterile cycle, whereas, if luteinization is excessive the corpus luteum may persist and menstruation may not occur and a new follicle may not form.

The ovary develops and secretes its own hormones after first being stimulated by the so-called gonadotropic hormones from the anterior lobe of the pituitary. The growing follicle produces the estrogenic hormone, estrin. The luteinizing hormone converts the ruptured graafian follicle into a corpus luteum. This in turn produces and secretes the corpus luteum hormone, progesterone. The action of estrin is maintained throughout the cycle because it is produced by the graafian follicle during the first half of the cycle and by the corpus luteum after ovulation occurs. If implantation of a fertilized ovum does not occur normal menstruation ensues and the corpus luteum atrophies with a resultant lowering in the production of progesterone. The secretion of estrin, which reaches its peak in the blood stream just prior to the onset of menstruation, also subsides.

The menstrual cycle recurs regularly and rhythmically from the time of puberty until the onset of a natural or artificial menopause unless pregnancy ensues or some type of endocrine dysfunction develops.

Urdan lists the actions of the estrogenic hormone as follow: it stimulates the growth and development of the female generative organs and the breasts; it stimulates the endometrium to growth and regeneration; it stimulates the growth of the mammary ducts and increases uterine motility thereby aiding in the prevention of early abortion, and it has an inhibitory effect upon ovulation and menstruation.

As previously stated, the anterior pituitary or gonadotropic hormone possesses both follicle-stimulating and luteinizing properties. Whether or not these effects are produced by the same or two different hormones is a point that as yet has not been settled definitely. Experimental evidence favors the elaboration of two discrete hormones. It has been observed that the gonadotropic hormone found in pregnancy urine comes closer to being a pure luteinizer than any other hormonal substance studied to date, although the ability of this hormone to produce ovulation has never been established definitely. The gonadotropic hormone found in the serum of pregnant mares is unlike that found

in the blood and urine of pregnant women. It is not excreted in the urine at any time during gestation. The action of this hormone has been studied experimentally by many investigators. Davis and Koff<sup>3</sup> believe it is effective in the treatment of patients in whom follicle growth and ovulation are at fault while those substances obtained from pregnancy urine have little or no therapeutic value.

#### THERAPEUTIC APPLICATION IN GYNECOLOGY

Time will not permit a detailed discussion of the therapeutic properties of these hormones but their clinical application in gynecology may be summarized in the following manner.

##### I. THE ESTROGENIC HORMONE

1. The estrogenic hormone causes a cellular proliferation of the vaginal epithelium with a stimulation of glycogen deposition; therefore, it is effective in the treatment of gonorrheal vaginitis in children. It helps to relieve the burning and itching associated with senile vaginitis and has been recommended in cases of vaginal hypoplasia. It may be administered locally in the first two conditions in the form of vaginal suppositories which are available in both juvenile and adult sizes. However, to date, the best results have been obtained from hypodermic administration supplemented by local treatment when indicated.

2. It stimulates uterine growth and motility and, therefore, is indicated in the treatment of uterine hypoplasia when clinical indications for the correction of this condition are present.

3. It stimulates growth and proliferation of the endometrium and, therefore, may be used to induce bleeding in cases of amenorrhea. It will check bleeding in cases of menorrhagia and metrorrhagia when these conditions are due to an ovarian deficiency, and it may be helpful in cases of polymenorrhea (too frequent menstruation).

4. It stimulates cellular proliferation and growth of the ducts in the mammary glands and has been reported as being effective in suppressing lactation. Therefore, it may be used to stimulate growth in cases of breast hypoplasia and to inhibit lactation following childbirth. The best results are obtained by local application in the form of an ointment which is rubbed thoroughly into the skin over the breasts. Dosules containing one or two thousand units each may be applied daily or every other day to both breasts.

5. It influences the gonadotropic activity of the pituitary by causing a reduction of follicle stimulation and an increase in luteinizing influences. Therefore, it may be helpful in the treatment of functional irregularities of uterine bleeding and in the relief of menopausal symptoms.

6. It causes an alteration in the cyclic function of the ovaries indirectly through the changes that are produced in the gonadotropic activity of the pituitary. Therefore, in addition to influencing functional bleeding it may be helpful in the treat-

ment of endocrine sterility and in cases of hypogonadism that are due to an ovarian insufficiency.

7. It is helpful in bringing about sexual maturation in cases of hypoovarianism. Therefore, it is indicated in the treatment of cases presenting the clinical syndrome suggestive of an estrin deficiency. This syndrome has been discussed in a previous publication.<sup>5</sup>

The standard measure of potency of estrogenic substances is expressed in terms of the international unit but, since the activity of different estrogens varies as do the methods of bio-assay, the equivalents of international units and rat units are not the same for different preparations. For instance one rat unit of Parke, Davis & Co. products has been reported as being equivalent to 3.3 international units, while one rat unit of Squibbs products was explained in the same report as being equivalent to 8 international units.<sup>4</sup> In a personal communication from the research division of the Schering Corporation they explain that one rat unit of their product is equivalent to approximately 10 international units.

These preparations may be administered subcutaneously, intravenously, orally, vaginally and by inunction. When given hypodermically the effect is enhanced by multiple frequent doses in oil since oil as a solvent slows up the rate of absorption thereby prolonging the effect produced. The relative inefficiency of estrogens by mouth is probably due to poor absorption from the intestinal mucosa. Estriol, one of the three naturally occurring estrogens, is generally considered to be more effective when given by mouth than either of the other two, but even this is only one tenth as effective when given orally as it is when given hypodermically. The other two naturally occurring estrogens are estrone and estradiol. Estriol is available commercially under the name of Emmenin (Ayerst-McKenna and Harrison) and is supplied for oral administration in liquid and tablet form. The unit of potency employed is the day oral unit. One teaspoonful of the liquid or one tablet contains 120 day oral units. The usual dose is from one to three teaspoonfuls or tablets daily. Other preparations available for oral administration are Theelin (Parke, Davis and Co.), the active principle of which is also estriol. The potency is expressed in terms of weight of the crystalline estriol present. It is supplied in capsule form in strengths of 0.06 milligrams, 0.12 milligrams and 0.24 milligrams which correspond to 1,000, 2,000 and 4,000 international units respectively. The usual dose is from one to four capsules daily. In Amniotin (E. R. Squibb and Son) the active principle is estrone. It is available in soluble gelatin capsules for oral administration in strengths of from 1,000 to 2,000 international units per capsule. The usual dose is from one to four capsules daily. In Progynon-DH (Schering Corporation) the active principle is estradiol. Its potency is expressed in terms of active biological units, one of which is equivalent to

approximately ten Allen-Doisy rat units, one rat unit being approximately equivalent to ten international units. It is supplied in tablet form in the following potencies: 120 (0.1 mg.), 240 (0.2 mg.) and 600 (0.5 mg.) active biological units. It must be remembered that ten times as many units are required to produce a clinical effect when given by mouth as are required by hypodermic injections. This is the basis upon which the active biological unit is established. Consequently, a tablet containing 120 active biological units will produce a clinical effect when taken by mouth equivalent to 120 rat units or 1,200 international units. It should be emphasized again that these comparisons of unit strengths are at best only approximations since the ratio of effect orally to intramuscular injection varies from condition to condition, from patient to patient and even in the same patient from time to time.

Local application of estrogens is considered effective only when the structure to be treated is available for topical application as for example the vulva, vagina or mammary gland.

Preparations available for use locally are: vaginal pessaries (Squibb) in children's size containing 1,000 international units each and adult size containing 2,000 international units each. Amniotin is also available for topical use in 5 cc. vials containing 10,000 international units per 1 cc. of corn oil. Progynon-DH (Schering) is available in the form of an ointment in concentrations of 200 rat units and 1,000 rat units per gram which would be equivalent to 2,000 and 10,000 international units respectively.

Preparations for hypodermic administration are Theelin in oil (estrone) in concentrations of 1,000, 2,000 and 10,000 international units per cc.; Progynon-B (estradiol benzoate) in concentrations of 500, 1,000, 2,000, 6,000 and 10,000 rat units each; Amniotin in oil (estrone) in concentrations of 2,000, 10,000 and 20,000 international units per 1 cc.

Time will not permit a more detailed consideration of the administration of these products in the various gynecological conditions mentioned, therefore, the reader is referred to recent publications by Schneider,<sup>6, 8</sup> Urdan,<sup>2</sup> Hawkinson,<sup>7</sup> Fletcher,<sup>5</sup> Geist and Salmon,<sup>9</sup> Campbell,<sup>10</sup> Siegler<sup>11</sup> and Frank.<sup>12</sup>

## II. PROGESTIN OR PROGESTERONE

1. Progestin acts upon the endometrium by preparing it for the reception and development of the fertilized ovum. This progestational effect is exerted during the last two weeks of the menstrual cycle, therefore, progestin is used in some cases of functional bleeding and in certain instances of endocrine sterility.

2. It quiets uterine contractility by exerting an effect that is antagonistic to the oxytocic action of estrin, therefore, it is effective in the treatment of endocrine dysmenorrhea and in cases of threatened and habitual abortion.

3. Because it can produce qualitative and quantitative alterations in the gonadotropic hormone of the anterior pituitary its use is indicated in the treatment of functional irregularities of uterine bleeding. Through this action on the pituitary it may also produce alterations in the cyclic function of the ovary.

4. It influences the metabolism of estrogens by bringing about a conversion of estrone into estriol. It helps to protect the estrogens against destruction and in this way enhances their utilization and excretion.

Progesterone is administered most effectively by the subcutaneous route. Oily solvents are used to prolong its absorption and thereby its action. Various methods of administration have been studied rather extensively by Venning and Brown, Stover and Pratt, Hamblen and others. These studies seem to indicate that progesterone administered intramuscularly in oily solutions is poorly absorbed and metabolized; also that the concurrent administration of estrone and estradiol with progesterone seems to increase its metabolism. There is little likelihood that the various preparations of corpus luteum used orally or parentally in the past contained any appreciable amount of progesterone.

The international unit has been employed generally as the standard of potency for this principle. It is equivalent to 1 mg. of pure progesterone and is equivalent to approximately 1 Corner-Allen unit. It should be emphasized here that this international unit does not apply to, nor is it comparable with, the new international unit for the gonadotropic preparations derived from pregnancy urine and pregnant mare's serum.

Commercial preparations available are Lipo-Lutin (Parke, Davis & Co.). Its potency is expressed in terms of international units. It is supplied in 1 cc. ampules containing the following potencies; 0.5, 1 and 2 international units each.

Proluton (Schering Corporation) contains pure progesterone in oil. It is a synthetic preparation. Its potency is expressed in terms of weights of crystalline progesterone. It is supplied in 1 cc. ampules of five different strengths, namely, 0.5 mg., 1 mg., 2 mg., 5 mg. and 10 mg., which correspond to one half, one, two, five and ten international units each.

Details of administration in the various conditions in which its use is indicated are given in recent publications by Campbell and Hisaw,<sup>13</sup> Elden and Wilson,<sup>14</sup> Pratt,<sup>15</sup> Krohn, Falls and Lackner<sup>16</sup> and Novak and Hurd.<sup>17</sup>

#### GONADOTROPIC HORMONES

These are the active gonadotropic principles of the anterior pituitary that influence directly the function of the gonads. They must be differentiated from the estrogenic group of hormones as well as from those in which progesterone is the active principle.

The estrogens are most effective in cases in

which replacement therapy is indicated. Their action is primarily substitutional. Their effect is temporary, consequently, they have been found to be most useful in cases of menopausal disturbance with its large variety of clinical manifestations and in gonorrheal vaginitis in children. The employment of estrogens to stimulate the pituitary and secondarily the ovaries is admitted as a theoretical possibility but clinical investigations to date have not substantiated this contention.

The corpus luteum hormone, progesterone, has been found to be most helpful in bringing about progestational changes in the endometrium and in the treatment of some types of dysmenorrhea. It is also effective when used in cases of habitual and threatened abortion. Otherwise the therapeutic effectiveness of this substance has been rather disappointing. A more rational type of therapy is that which includes certain gonadotropic principles which produce stimulation of the ovaries by the patient's own pituitary gland. Among those available at the present time is the anterior pituitary-like hormone obtained from the urine of pregnant women and called chorionic gonadotropin. Its function is to maintain the corpus luteum of pregnancy but, in nonpregnant women, it causes an atresia of the graafian follicles. Its stimulation of the human ovaries will not produce ovulation nor corpus luteum formation. It might be mentioned that it has been found effective in the treatment of undescended testicles, but that of course is another story. The gonadotropic substance obtained from the serum of pregnant mares is quite different from the chorionic principle and from the hormones obtained from the anterior lobe itself. Nevertheless, its physiological effects simulate the function of the true pituitary hormone more closely than any others. It will stimulate the human ovaries to ovulation and corpus luteum formation. The low protein content of the commercial preparations has made intravenous administration of large doses of this hormone relatively safe. However, intravenous injections are used only when ovulation is to be produced. Daily doses of from 10 to 25 units are given subcutaneously for three or four days before the intravenous injection, which is usually given on the twelfth or thirteenth postmenstrual day, in order to stimulate adequate follicle development. They are resumed afterwards to sustain the secretory activity of the corpus luteum. Subcutaneous injections of this substance also are used for supportive stimulation of the follicle and corpus luteum. Intramuscular injections have not been found better since absorption is slower when it is given under the skin. Rationalization of cyclic therapy is not as yet completed and until it is stimulation of the follicle should be attempted only during the first two weeks of the menstrual cycle. This will avoid the risk of producing the formation of cystic follicles. However, in cases of extensive pituitary failure, therapy should be continued throughout the en-

tire cycle and should be adapted to the normal cyclic variations. The size of the dose and frequency of administration should be based upon a study of the patient's response to treatment. This may be observed in routine vaginal smears, the development of secondary sex characteristics, in the growth of the external genitalia and uterus and by close observation of the duration and the interval of the menstrual flows. If large doses fail to produce evidences of improvement after a period of three months, further treatment is not indicated.

There is marked variation in the units of strength employed by the different manufacturers of these products. No two of them are alike so, until a definite standard has been adopted, all that can be said for the extracts prepared from pregnant mare's serum is that the unit of Gonadogen (Upjohn) is the largest. That of Prephysin (Chappel) and Gonadin (Cutter) are smaller and approximately equivalent, while that of Gonadotropic Hormone (Armour and Ayerst, McKenna and Harrison) are identical and much smaller than the others. However, with appropriate doses the desired results may be obtained with any one of these materials.

Their use is indicated in the following types of gynecological conditions: primary amenorrhea, secondary amenorrhea, oligomenorrhea, irregular and infrequent menstruation, anovulatory cyclic bleeding and in infantilism. It may be used in menorrhagias and metrorrhagias of endocrine origin that do not respond to the more common types of treatment. It should be given a thorough trial in cases of endocrine sterility. Satisfactory results have been reported by Severinghaus<sup>1</sup> from its use in cases of repeated abortion, premature menopause and dysmenorrhea. The size of the dose and frequency of administration always must be adapted to the individual requirements in each case.

#### SUMMARY AND CONCLUSIONS

1. Gynecological endocrinology has a definite place in the general practice of medicine but, until present clinical procedures are better established, a conservative attitude toward the employment of this type of medication is recommended.

2. Cyclic uterine bleeding may occur regularly in the absence of ovulation and the progestational changes in the endometrium that precede normal menstruation.

3. The anterior lobe of the pituitary supplies the stimulus necessary for the initiation of a normal menstrual cycle, after which the ovary develops and secretes its own hormones.

4. The clinical application of the therapeutic properties of the estrogens and progestin has been discussed.

5. An attempt has been made to overcome the confusion which exists in regard to the units and dosage of the various endocrine products that are available for commercial use, particularly the estrogenic preparations. When estrogenic sub-

stances are administered orally, they are only one tenth as effective as they are when administered hypodermically.

6. The function of the gonadotropic substance obtained from the urine of pregnant women is to maintain the corpus luteum of pregnancy but it will not produce ovulation or corpus luteum formation in the human ovary; whereas, the gonadotropic substance obtained from the blood serum of pregnant mares will help to produce ovulation and corpus luteum formation in the ovaries of humans. The relative potencies of the different commercial preparations have been presented and the various clinical conditions in which the use of this substance is indicated have been discussed.

Missouri Building.

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An airplane pilot who is not provided with oxygen begins to lose his mental and physical efficiency at an altitude of about 12,000 feet, Harry G. Armstrong, Toronto, Canada, states in *Hygeia, The Health Magazine*. His symptoms are more pronounced at 18,000 feet. Between 18,000 and 22,000 feet his actions are like those of a drunken man, and he becomes either sleepy or very active with outbursts of laughter or rage. At about 25,000 feet unconsciousness occurs and unless descent to a lower altitude is made death results within a few minutes.

The greatest amount of dreaming is done by persons who are between 20 and 25 years old, Doris W. McCray, Cedar Rapids, Iowa, states in *Hygeia, The Health Magazine*. Dreams increase with the variety and activity of the individual's intellectual life. Students report the heightened frequency of dreams during examinations and intensive school work. Dreaming decreases with age. A dream seldom lasts more than ten minutes.

## PSEUDOTUMORS OF THE ORBIT (INFLAMMATORY)

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To date reports of only thirty-seven cases of inflammatory pseudotumors of the orbit have been published. This figure would lead one to believe that they are a rare occurrence. However, I do not believe that the reported cases represent the true proportion of such tumors to the number of other reported pathological conditions as I have seen two cases in one year.

The reason for reporting these two cases is not merely to add to the number of reported cases but to call attention to the possibility of its existence before differential diagnosis is made in cases of new growths of the orbit. Clinically, they resemble tumors of the orbit closely and the treatment of pseudotumors of the orbit is so radically different from that of malignancies that it is highly important to make the correct diagnosis before surgical intervention is attempted.

On one of my cases I had made the tentative diagnosis of malignancy of the orbit but did not feel certain enough to do an exenteration of the orbit so decided on a biopsy. The other case had been diagnosed by one of the outstanding ophthalmologists of this country as a malignancy of the orbit and the patient had been advised to have an exenteration of the orbit. Reese analyzed thirty reported cases and fifteen or 50 per cent had had an exenteration of the orbit. For obvious reasons the percentage of exenterations in unreported cases is probably much higher. The history, course and symptoms of pseudotumors of the orbit are similar, or identical, to those of tumors of the orbit, either benign or malignant.

Various theories as to the etiology have been advanced, but none has proven applicable to all cases. The most common causes advanced are late syphilis, tuberculosis, infections either metastatic or by continuity and trauma.

The most valuable procedure in arriving at a positive diagnosis is a biopsy. In most cases it can be seen readily that it is an inflammatory pseudotumor as one encounters all the signs of inflammation in contrast to the noninflammatory in benign or malignant tumors.

### REPORT OF CASES

Case 1. T. S. M., white female, aged 61, was seen April 20, 1937. A growth on the right lower lid had been incised five months previously and was reopened a month later. Ever since it was reopened there had been a discharge with occasional discomfort in the eye but never any prolonged or severe pain. Two months previous to the time I saw the patient she noticed a deep mass in the region of the incision which rapidly became worse.

Examination revealed an esotropia of 10 degrees that increased on looking to the left. Smears and cultures of the discharge from the eye were negative for microorganisms. The vision was 20/30 in each eye. There

was a mass that began at the external canthus and back of the edge of tarsus of the right lower lid. The mass was 2.5 by 1.5 by 1 cm. and moved with the eyeball. One centimeter from the external canthus in the inferior fornix there was a gray ulcerated area 3 mm. in diameter surrounded by a congested area. The eyeball was slightly congested. The right eye had a proptosis of 3 mm. The Wassermann and tuberculin tests were negative; blood count and urine were normal.

Under local anesthesia, through a skin incision, an effort was made to obtain a specimen for biopsy but when the mass was exposed it was found to be adherent to all surrounding tissues and bled quite freely. The mass being readily accessible, it was removed in toto. It was found to be adherent to the inferior rectus muscle, 1 cm. back of its attachment, and to the ulcerated area in the fornix. The wound healed by first intention. Patient was given potassium iodide. After a couple of weeks there was still considerable induration and two roentgen ray treatments were given. In two months time all signs of inflammation had subsided but the patient had a diplopia when looking down. There has been no recurrence of the growth.

### PATHOLOGICAL REPORT

*Gross Pathology.*—The specimen measured 20 by 11 by 7 mm. and presenting one rough surface and one smooth cut surface. It was relatively soft in consistency. The tumor mass was fairly well limited. The edges were fairly firm and sharp.

*Microscopic Pathology.*—Section taken through the tissue revealed a rather dense fibrous tissue stroma with adhesions around the edges. Within the stroma of the nodules were many foci of lymphoid cells, some of which were normal in appearance and others showed moderate hyperplasia. In some of the foci of hyperplastic lymphoid tissue an occasional mitotic figure could be seen. Some infiltration into this dense fibrous tissue stroma of mononuclear leukocytes could be noted. Most of these cells appeared to be of plasm cell type. Eosinophilic cells were scattered throughout the stroma. In one or two places apparent necrosis had taken place and there were considerable numbers of polynuclear leukocytes in these necrotic areas.

Diagnosis was inflammatory pseudotumor.

Case 2. F. B., white male, aged 53, was seen August 23, 1937. He first noticed that the left upper lid was swollen and drooped three months before coming to me. This swelling and drooping of the lid came on about a week after a slight cold. Within a week after the onset the right upper lid was swollen also. There was occasional discomfort in the left eye but no sharp

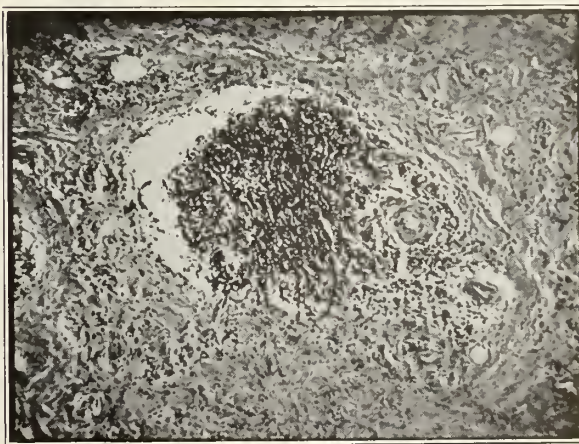


Fig. 1. Microphotograph of tissue from case 1 showing a necrotic nodule surrounded by fibrous tissue.

pain. He consulted an oculist of outstanding ability who made the diagnosis of malignant growth of left orbit and advised exenteration of the orbit.

On examination, vision with correction was 20/20 in each eye with a normal muscle balance when looking straight ahead. The left upper lid showed a moderate ptosis with considerable impairment of the motion of the upper lid and the movements of the eyeball were impaired in all directions excepting downward. The left eye showed proptosis of 7 mm. more than the right and there was a marked resistance back of the eyeball. A mass was felt beginning back of the tarsus of the upper lid filling the space between the upper rim of the orbit and the eyeball from the nose extending two thirds of the way to the temporal margin of the orbit. The eye was normal otherwise. Fields and blind-spots were normal.

Tuberculin and Wassermann tests were negative. Blood count and urine were normal.

Röntgen ray examination of all sinuses showed no erosion of the bone in the region of the orbit but showed a pansinusitis of the left sinuses excepting the sphenoid.

The diagnosis was inflammatory pseudotumor apparently coming from the floor of the frontal or the posterior ethmoids.

Under local anesthesia the growth was removed through a skin incision at the lower margin of the brow. The lesion had all the characteristics of an inflammatory tumor and bled quite freely. The mass was adherent to the bone in the region of the posterior ethmoids and extended back into the orbit about 2.5 cm. from the inner rim of the orbit.

The patient made an uneventful recovery with retention of normal vision, fields, muscle balance and no ptosis or proptosis. To date, October 20, 1940, there has been no recurrence.

#### PATHOLOGIC REPORT

**Gross Pathology.**—The specimen consisted of tissue from the orbit, irregular in shape measuring 25 by 17 by 3 mm. The material was grayish pink with some white streaks and small yellow nodules of fat attached. The tissue was rather stringy and fibrous.

**Histologic Pathology.**—The section showed conglomerate and solitary endotheloid foci containing multinucleated giant cells interspersed throughout. These foci were rather dense connective tissue showing some focal round cell infiltrates in places. In many instances the formation resembled that of a proliferating tubercle. No definite foreign body material was seen and there were no caseous foci.

Diagnosis was inflammatory pseudotumor.

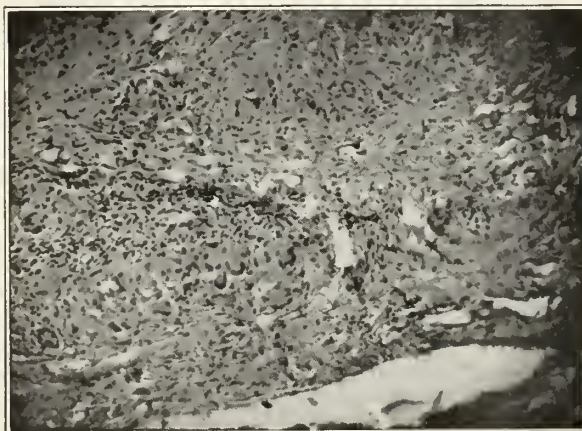


Fig. 2. Microphotograph from growth removed from the orbit of case 2. Note many giant cells and areas of dense fibrous tissue.

#### DISCUSSION

As mentioned previously the etiology of inflammatory pseudotumors is not established. In reviewing the literature a number of etiological factors have been advanced and possibly the theories were correct in most instances as one can readily accept the etiological factors advanced by each author in his particular cases. That is particularly true with those attributing the etiology to various foci of infection, either by continuity or metastases, tuberculosis, late syphilis (gumma) and trauma.

In the two cases here reported, I feel justified in attributing them to infections by continuity. In the first case, following the second incision of a growth of the right lower lid there was a discharge from the eye that was more or less continuous with intermittent discomfort in that region. On examination there was an ulcerated area in the fornix just beyond the sight of the old incision in the lid. The pseudotumor was attached to the ulcerated area. The infection most likely entered the orbit at the point of ulceration.

In the second case the patient had a pansinusitis of the same side and the pseudotumor was adherent to the bone in the region of the posterior ethmoid cells. Although no necrotic bone was found at the sight of the attachment, in view of the history of a preceding cold, it is most likely that the infection originally came from the sinuses by continuity.

I do not propose to advance the theory that all cases of inflammatory pseudotumors of the orbit are from infections by continuity but I believe that in both cases reported it was from such an infection.

The giant cells found in the tumors do not signify tuberculosis. As was shown by Verhoeff, infection in the orbit usually causes the formation of giant cells. The reason for giant cell formation in orbital inflammations has not been fully explained.

#### SUMMARY

Two cases of inflammatory pseudotumors of the orbit in which the tumors were removed with no recurrences to date are reported.

The etiologic factor in these two cases was probably infection by continuity.

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#### EXERCISE WON'T PREVENT DOUBLE CHINS

Exercise for the neck and throat, frequently advocated by "beauty" articles, cannot prevent double chins, *Hygeia*, *The Health Magazine* replies in answer to an inquiry.

"If a person grossly overeats so that he accumulates masses of fat, exercise cannot keep up with the process of fat storage," *Hygeia* states. "Furthermore, there is no evidence that the amount of exercise which one would take by contraction of the muscles of the neck would have any local effect. Even the constant activity of the abdominal muscles in respiration, twelve to fifteen times a minute at least, throughout hours, days, weeks and years, does not prevent the development of immense masses of fat between the abdominal muscles and the skin."

## TYPE XXXIII PNEUMOCOCCAL PNEUMONIA

A REPORT OF FIVE CASES

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AND

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ST. LOUIS

Only one clinical report on the occurrence, clinical characteristics and therapy of pneumonia due to the type XXXIII pneumococcus has appeared in the literature. In this report Davidson and Bullowa<sup>1</sup> presented data on eleven cases seen in the Harlem Hospital during 1938-1939. They compared the pneumonias due to type XXXIII pneumococcus with those due to type IX, from which the former has been separated recently. During the last year five cases of pneumonia due to the type XXXIII have been observed in the St. Louis area. They are being reported to add to the rapidly accumulating data on the clinical characteristics of infections by this pneumococcus.

### CASE REPORTS

Case 1. P. K., white male aged 22, was admitted to the medical service of the St. Louis City Hospital on February 2, 1940. He stated that he had been well except for a "head cold" until three days prior to admission when he had a chill lasting about twenty minutes. The chill was followed by fever, general muscular aches and cough. The following day there was severe, sharp pain in the left chest and he began expectorating blood-tinged sputum. The fever and pain continued until hospitalization.

Physical examination revealed a well developed and well nourished young white male, lying restlessly in bed. His temperature was 40 C., pulse 120 per minute, respirations 32 per minute, blood pressure 116/72 mm. Hg. There was slight cyanosis of the nail beds and mucous membranes. The remainder of the positive physical findings were confined to the chest. There was a definite lag of the lower left chest with dullness on percussion and increased tactile fremitus over the left lower lobe. The breath sounds over this lobe were bronchial in character and a few crepitant rales were heard.

Laboratory findings showed a leukocyte count of 17,050, with a left shift, erythrocytes 4.9 million and 90 per cent hemoglobin (Sahli). There were no abnormal findings in the urine. The blood Kahn test was negative. The sputum was grossly bloody and direct typing revealed type XXXIII pneumococcus. There was no capsular swelling with type IX pneumococcal typing serum. There was no growth on culture of the blood. Roentgen ray of the chest revealed infiltration of the left lower lobe.

After establishing the diagnosis, the administration of sulfapyridine and pneumococcus antigen\* was started. The sulfapyridine was given in 1.0 gram doses every hour for four hours, then every four hours for thirty-six hours when it was changed to 4.0 gms. a day; a total of 37 grams was given during eight days. One cubic centimeter of pneumococcus antigen was given twice daily for four days. There was no reaction to

either agent except nausea and vomiting for the first thirty-six hours. Upon this regime the temperature dropped to normal in twenty hours and thereafter remained below 38 C. His recovery was uninterrupted and he was discharged twelve days after admission. The blood sulfapyridine level on the third hospital day was 1.3 mgs. per cent.

Case 2. H. K., white male, aged 72, was admitted to the medical service of Barnes Hospital on February 10, 1940. He stated that he had been ill for three weeks with "stomach trouble," general malaise and cough. He had lost some weight during this interval but none prior to the onset of his present illness. No other details relative to the nature of the illness were available but it was learned that the patient had lived alone, often without adequate food, and had for several years consumed considerable quantities of liquor and beer.

Physical examination revealed an elderly, poorly developed and emaciated white male of approximately 70 years lying restlessly in bed. He was flighty and irrational at times. His temperature was 39.8 C., pulse 100, respirations 30 per minute, blood pressure 138/86 mm. Hg. Examination of the chest revealed severe pulmonary emphysema and a few coarse, moist rales at both lung bases. There were no changes in the percussion note nor in the breath sounds. The remainder of the examination was essentially negative except for advanced sclerosis of the peripheral arteries.

The leukocyte count was 7,600 with a differential count of 1 per cent eosinophiles, 44 per cent stabs, 36 per cent segmented, 13 per cent lymphocytes and 6 per cent monocytes. The urine contained no abnormal constituents. The sputum on February 10 and 11 was found to contain type XXXIII pneumococcus. Blood cultures taken on February 10 and 19 showed no growth. The blood Kahn test was negative. Roentgen ray of the chest was reported as showing an atypical pneumonia of the right lower lobe.

Sulfapyridine was started shortly after admission in doses of 1.0 gm. every hour for four hours and then at four hour intervals. Upon this treatment the temperature dropped to 37 C. in forty-eight hours. The blood sulfapyridine levels were 5.0 and 8.2 mgs. per cent, respectively, on the second and third hospital days and the white blood count remained about 7,000. Despite the drop in temperature there was little improvement in the patient's condition. He still appeared ill, was more irrational and restraints were necessary. After remaining below 37.5 C. for about thirty-six hours the temperature again became elevated, reaching 38.8 C. on the fourth hospital day. The blood sulfapyridine was 5.8 mgs. per cent and the white blood count 7,000. As the temperature remained elevated and was thought possibly due to sulfapyridine, the drug was discontinued on the seventh hospital day. He had received a total of 38 gms. The temperature, after withdrawal of the drug, rose to 40.5 C. and twenty-four hours later the drug was resumed. It was given by vein as a 5 per cent solution of sodium sulfapyridine and during the next four days he received a total of 5.0 grams daily. Large ecchymoses appeared over the body during the disease as well as a hematoma in the right sternocleidomastoid muscle. The blood cevitic acid level was so low that it could not be determined and he subsequently was given large doses of cevitic acid intravenously daily. Despite all therapy the temperature remained above 38.0 C. and he became more irrational. He expired on the twelfth hospital day.

An electrocardiogram taken on the second hospital day was interpreted as showing myocardial damage but there was no clinical evidence of congestive failure at any time. The white blood cell count on the tenth hospital day was 10,500 with a less marked shift to the left in the Schilling differential count than previously. Permission for an autopsy could not be obtained.

Case 3. G. B., white female, aged 41, was admitted to

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\*Pneumococcus antigen was supplied by Eli Lilly and Company, Indianapolis, Ind.

DePaul Hospital as a private patient on February 24, 1940. For several days she had suffered from generalized bodily aches and fever. Two days prior to admission she began coughing with the expectoration of a small amount of white sputum. There had been no chill.

Physical examination revealed a well developed and well nourished middle aged white female lying quietly in bed. She was rational and cooperative. The temperature was 39.0 C., pulse 110, respiration 30, and blood pressure 108/76 mm. Hg. The only other significant findings were in the chest. Over the right upper and right middle lobes there was dullness on percussion, increased tactile fremitus, bronchial breathing and many moist rales.

The total white blood cell count was 23,900 with a marked left shift in the differential smear. The urine was normal. The sputum was tenacious and bloody and upon direct typing no pneumococci were identified; however, mouse peritoneal washings revealed a pure culture of pneumococci which gave capsular swelling with both types IX and XXXIII diagnostic sera. An attempt was made to establish definitely the type of organism by using progressive dilutions of the typing sera but this was not successful as the capsular swelling disappeared at the same level of dilution with each of the two sera. Roentgen ray examination of the chest revealed infiltration of the right upper and middle lobes. The blood culture showed no growth.

As soon as the diagnosis was established the patient was given sulfapyridine orally. No blood levels were determined. A total of 22.0 grams was given in five days. On this treatment the temperature dropped to normal within twenty-four hours with comparable decreases in the pulse and respiratory rates. The white cell count progressively decreased from the original level to 9,350. She was discharged on the thirteenth hospital day.

Case 4. R. L., white female, aged 47, was admitted to the medical service of the St. Louis City Hospital on March 28, 1940. She was well until three days prior to admission when she had a chill followed by fever and pain in the chest. She denied having a cough or any expectoration.

Physical examination revealed a white female appearing older than her stated age of 47 years. She was poorly developed, slightly obese and of low mentality. Her temperature was 38.0 C., pulse 130, respirations 28 and blood pressure 115/68 mm. Hg. The only positive physical findings were confined to the thorax. There was dullness on percussion, suppression of breath sounds and a few coarse, moist rales over the right lower chest anteriorly and extending into the axilla.

The white blood count was 9,400 with a slight shift to the left. The sputum was mucoid and on three occasions revealed type XXXIII pneumococci. There was no capsular swelling with type IX diagnostic serum. Efforts to culture the organism were, however, unsuccessful. Roentgen ray examination of the chest showed infiltration of the right middle lobe. There was no growth on culture of the blood.

Soon after admission the temperature rose to 38.6 C. and then promptly dropped to normal without any specific therapy. It thereafter remained normal. She was observed clinically and roentgenographically over a period of eighteen days and showed gradual clearing of the process. She was discharged having received only symptomatic treatment.

Case 5. P. H., white male, aged 47, was admitted to the medical service of the St. Louis City Hospital on May 14, 1940. He had been well until six weeks prior to admission when he began "to feel weak and sick." There was no chill. He was forced to quit his work and go to bed due to fever and general weakness. Within a few days he began expectorating a foul, brown sputum and noted severe pain in the upper chest anteriorly. He

was treated symptomatically and when he failed to respond was referred to the hospital.

Physical examination revealed an emaciated but well developed white male lying quietly in bed. He was coughing frequently and expectorating a fetid, yellow sputum. His temperature was 37.6 C., pulse 140, respirations 22 per minute, blood pressure 116/68 mm. Hg. The mucous membranes were pale. The breath was foul. The other essential physical findings were confined to the chest. There was dullness on percussion over the entire left chest anteriorly and over the upper half posteriorly, except for the immediate apical region which was resonant. Tactile fremitus and vocal resonance were decreased over the upper two thirds of the entire left chest. The breath sounds were suppressed and bronchovesicular in character. Many coarse bubbling rales were heard anteriorly.

The white blood count was 12,900 with a moderate shift to the left; red blood cells 2.95 million with 45 per cent hemoglobin (Sahli). The urine contained no abnormal constituents. The blood Kahn and Wassermann reactions were positive on two occasions. The fasting blood sugar level was 75 and the nonprotein nitrogen 16.0 mgs. per cent. Roentgen ray examination of the chest revealed collapse of the left upper lobe with a pneumothorax over the upper one third of the left lung field and a homogenous area of increased density over the middle third and anteromedial aspect of the left thoracic cage. The right lung was clear.

On the day following admission sulfapyridine was started by mouth in doses of 1.0 gm. every hour for four hours, then 1.0 gm. every four hours. Blood transfusions were given also. Left thoracentesis at this time yielded 250 cc. of foul smelling, thick, yellow pus. A few cubic centimeters of methylene blue were injected into the area from which the pus was removed. Within a few minutes following the injection the patient began expectorating sputum tinged with the dye, thus confirming the clinical impression that the pocket communicated with the bronchial tree. Culture of the pus showed a pure growth of type XXXIII pneumococcus. The organism did not swell with type IX serum.

The sulfapyridine was continued and the patient seemed improved but continued to have fever. Bronchoscopy, done on the sixth hospital day, revealed no gross evidence of malignancy but only inflammation of the bronchial tree with pus exuding from the upper left main bronchus. Biopsy of this area was reported as showing no evidence of malignancy.

On the tenth hospital day he was transferred to the surgical service where a thoracotomy was done. Portions of the fifth and sixth left ribs were removed at the anterior axillary line and a large lung abscess was exposed. It was unroofed with the cautery and a large bronchial opening into the sac was clearly visible. The cavity was packed tightly with gauze. Following the operation transfusions were given and sulfapyridine, which was discontinued before the operation, was resumed. At the time of this report, he is still in the hospital but is improving and the cavity is filling in with granulation tissue. He is to be discharged and followed in the clinic.

#### DISCUSSION

The five cases of pneumonia due to the type XXXIII pneumococcus reported in detail were seen in the St. Louis area during 1939-1940. This group comprised 1.6 per cent of the entire series seen during this time. Over the same period, three cases (0.96 per cent of the series) of type IX pneumonia were seen with no deaths. Of the five type XXXIII pneumonia cases, one died. Sulfapyridine alone or with polyvalent pneumococcal antigen was used for therapy; no type specific serum was available.

The only difference noted by Davidson and Bullova<sup>1</sup> in the clinical aspects of type IX and type XXXIII cases was the apparent tendency to a reversal of the sex ratio in the two types. They found the type XXXIII pneumococcus occurring more often in females. This was not true of our small group as there were three males and two females.

We agree that there was nothing characteristic about the clinical features of the type XXXIII infections that would distinguish them from type IX or any other higher type of pneumococcal pneumonia. Of our five cases, four had an acute onset, but we know little about the clinical course of one of these until he was admitted to the hospital six weeks later with a lung abscess. Another of the four was admitted on the third day of the disease but was so mildly ill that no specific therapy was given. The other two cases were acutely ill when they entered the hospital. The fifth case occurred in a 72 year old chronic alcohol addict from whom an accurate history could not be obtained but who had been ill for three weeks before admission.

From the roentgenological point of view, only two of the cases were considered "typical lobar pneumonias." Two others, although infection was confined to one lobe, were considered atypical because of the lack of a homogenous density. In these two instances the lobes were incompletely involved and the shadows were mottled and irregular. No special remarks can be made about case 5 because of the late stage at which he entered the hospital.

Therapy with sulfapyridine was satisfactory in cases 1 and 3. Case 4 required no therapy and case 5 could not have been expected to respond to anything other than surgical drainage. Case 2 died on the twelfth hospital day despite vigorous therapy with sulfapyridine and blood levels of the drug that were considered adequate. It is interesting that the response to treatment in this case was comparable to that seen in pneumococcal pneumonias of other types in our series. There was a drop in temperature to normal levels within thirty-six hours but there was a secondary rise and finally death. The total leukocyte count on admission was 17,000 or above in two of the cases. In the mild case it was 9,400. Case 2 had a count of 7,600 on admission but it rose to 10,500 before death. The case admitted with a lung abscess had a white cell count of 12,900. In all cases there was a shift to the left in the differential counts.

The classification of all organisms was based upon capsular swelling with commercial diagnostic serum. The complete serological characteristics of the organisms were not fully studied since in the isolation of strains certain difficulties were encountered. Four of the cases showed capsular swelling with type XXXIII serum only. Thus there can be no doubt as to their identity. The fifth, case 3, showed swelling with both type IX and XXXIII

serum and consequently may represent the intermediate type (strain G) described by Walter and coworkers.<sup>2</sup> In their study of fifteen cultures since the recognition of type XXXIII, only one has fallen into this group. Vammen<sup>3</sup> has pointed out serological variants of type IX in his study of the antigenic structure of the organism. Although the organism from case 3 may fall into the intermediate group, we have included the case in this series because it did show capsular swelling with type XXXIII serum.

As stated previously, certain difficulties were encountered in isolation of the various strains. In at least two instances the organism failed to grow on artificial media. In the third case, type XXXIII only was found in the sputum as well as in mouse peritoneal washings, but on routine culture type VI pneumococcus only was recovered. This occurred on three separate occasions. That may have been due to our failure to cultivate under reduced oxygen tension. Walter et al.<sup>2</sup> have noted that type XXXIII pneumococcus is relatively avirulent for mice and requires reduced oxygen tension for first isolation. In case 5 the organism was grown from pleural fluid but most luxuriant growth was obtained under partial anaerobiosis.

#### CONCLUSIONS

1. Five cases of pneumonia due to pneumococcus type XXXIII are presented in detail. The clinical and laboratory features of these cases are discussed and compared with those previously reported.

2. There was nothing in the clinical course of these cases to differentiate them from pneumococcal infections of any of the higher type pneumococci.

3. The response to therapeutic measures also was comparable to that of other pneumococcus infections.

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#### BRITAIN TO LICENSE U. S. PHYSICIANS

Canadian and United States physicians are being licensed by Great Britain for the duration of the war, the regular London, England, correspondent of *The Journal of the American Medical Association* reports in the December 14 issue.

"The government has made an order under the Emergency Powers Act, passed for the purposes of the war, enabling the General Medical Council to register for the period of the emergency Canadian and United States physicians," he reports. "They will thus be able to join the Emergency Medical Service with the same privileges as British physicians. Previously we have never had medical reciprocity with the United States."

## CARCINOMA OF THE SIGMOID AND THE ADVANTAGES OF THE DEVINE COLOSTOMY

GEORGE W. HOGEBROOM, M.D.

SPRINGFIELD, MO.

The simplicity of the Devine<sup>1</sup> technic in the treatment of carcinoma of the sigmoid and rectosigmoid junction impressed me recently in two cases in which resections of annular carcinomas of the rectosigmoid and of the pelvic colon were done followed by primary end to end anastomosis. This technic has been brought to the attention of the general surgeon by Reginald Jackson<sup>2</sup> and Ochsner and DeBakey. The results I obtained in these two recent cases were gratifying and I believe the technic is a valuable one for the general surgeon who does not have a great number of these cases but does have a certain number under his care who are unable to obtain, or may not wish, the services of a specialist in that particular field.

The Devine technic is based on the principles of the Mikulicz resection of the colon which still is a method of choice, with modifications as described by Rankin,<sup>4</sup> for lesions of the transverse and descending colon. It has the advantages of defunctionalizing the distal colon so that wide resection with primary end to end anastomosis of the colon may be done with little fear of complicating peritonitis.

I have made a transverse incision in the upper left quadrant of the abdomen as opposed to Devine who approaches the transverse colon through a longitudinal incision on the right side. My reason for this is that a better functioning colostomy is made if perchance the secondary resection cannot be done and also in a few cases, especially in women, there is a possibility of a complicating gall-

bladder disease which may at some time require surgical treatment. A colostomy in the left upper quadrant leaves the right side of the abdomen free from adhesions.

After a transverse incision of from 8 to 10 cm. in length is made, the liver is palpated for metastases, then the lumbar glands and lastly the tumor to determine if the second stage resection is indicated. A long loop of transverse colon is brought through the wound and the opposing taenia coli are sutured together with silk beginning approximately 3 cms. from the top of the loop and extending toward the root of the mesentery for a distance of from 8 to 10 cms. This spur should be this long in order to accommodate the crushing clamps which ultimately will be applied. The top of the loop is grasped with two heavy Ochsner clamps and divided with the cautery. The ends of the severed bowel are held in the distal ends of the wound and the peritoneum and fascia are sutured; care is taken to use no anchoring sutures in the bowel wall itself. The skin is closed and the wound dressed with vaseline gauze. The proximal clamp may be removed within from forty-eight to seventy-two hours, depending on gas distention, and the distal clamp is allowed to separate itself. The distal colon then is completely cut off from its proximal portion and daily irrigations are begun through the stoma and by the rectum in order to cleanse this portion of the colon thoroughly.

The colostomy assumes its function rather rapidly and after a period of from two to four weeks the patient's condition should be suitable to perform the resection and anastomosis. A low midline incision is made and the colon with the growth is mobilized. It is important to preserve the blood supply to the proximal segment of the colon and if the resection is to include a portion of the rectum the superior hemorrhoidal artery first should be ligated. The left ureter should be identified; an ureteral catheter placed before operation facilitates its identity.

A wide resection is performed above and below the growth including a wide segment of the mesentery. With the growth in the lower sigmoid, an end to end anastomosis may be done nicely with the Rankin clamp. If the anastomosis is between the sigmoid and the rectum it is best not to apply a crushing clamp to the rectum since the blood supply is not as abundant after ligation of the superior hemorrhoidal artery. Following resection of a rectosigmoid growth the pelvic floor is reconstructed. After the anastomosis is made a rectal tube is passed and guided by the hand in the abdomen beyond the anastomosis. The external anal sphincter is dilated or cut to prevent painful swelling at the anus. This is a small but important step for if not done the pain resulting will be the chief postoperative complaint of the patient. A Penrose drain is placed to the anastomosis and the abdomen is closed.

The rectal tube usually will pass spontaneously;



Fig. 1. (Case 2.) Clamp placed in colostomy.

if not it may be removed in from five to six days. After ten days the rectum is irrigated with normal saline solution and for the first few irrigations there will probably be some leakage through the abdominal sinus. However, after a few days this will cease and the spur crushing clamp then is applied (figure 1). I use the Ochsner-DeBakey<sup>3</sup> modification of the Devine clamp because of its light construction. In one case it was necessary to close the colonic stomae; in the other case the colostomy openings contracted and caused no inconvenience.

This method appeals to me because it leaves the patient with a normally functioning rectum. Although it may be criticized as not as radical as an abdominal-perineal operation, I believe it is more radical than the Mikulicz operation which is still the method of choice in lesions of the transverse and descending colon. Recovery is less trying. There are less complications than are encountered in an abdominal-perineal operation.

#### REPORT OF CASES

Case 1. Female, aged 48, entered the hospital August 1, 1939. She stated that two weeks previously she suddenly became constipated and rapidly developed abdominal swelling although she believed that she had gradually been developing abdominal distention for the last month. There were no other changes in bowel habits. During the last two weeks she had taken repeated physics and enemas with no bowel movements. She had had a mild degree of nausea but no vomiting. Temperature was 99 F. and pulse 88. Red cell count was 4,380,000; Hg. 90 per cent; white cell count 10,900.

*Past History.*—I had done a subtotal hysterectomy on the patient three years previously for fibroid. Examination revealed well nourished female who appeared acutely ill. The abdomen was greatly distended, and tympanic; no intestinal movements were heard. Rectal examination gave normal findings. Flat roentgen ray plate of the abdomen revealed an enormously dilated colon. Cecostomy was performed without abdominal exploration on August 2. On August 12 sigmoidoscopic examination was made and was unable to pass the sigmoidoscope past the rectosigmoid junction. No tumor nor evidence of tumor was seen. On August 14 no obstruction of colon was demonstrated with barium enema. On August 15 barium by mouth showed no evidence of obstruction in intestinal tract. Due to these findings and the fact that she had regained fairly normal bowel movements after cecostomy I was of the opinion that possibly this obstruction might have been inflammatory associated with the previous hysterectomy. She was discharged with cecostomy drainage. On October 5, abdominal exploration through lower left rectus incision revealed the pelvic colon firmly adherent within the pelvis. With considerable difficulty these loops were freed from the pelvis after which a large inflammatory mass measuring 6 cm. in diameter was felt in the region of the rectosigmoid. The liver was smooth and there were no definitely palpable lumbar glands. Because of rather severe shock colostomy was deferred. On October 23, Devine colostomy was performed. On November 24 she received a blood transfusion. During this time the patient had lost considerable weight and developed an anorexia. She was dismissed on December 17 with the colostomy functioning well. On January 15, 1940, she was readmitted to the hospital with the general condition much improved. On January 16, resection of carcinoma at rectosigmoid junction with end to end anastomosis was done. On February 8, crushing clamp was applied. On February

21, she was discharged and readmitted on March 9 for closure of colostomy openings. On August 1, 1940, she was seen at my office. Condition was good, weight gain was normal, and she had bowel movements without a laxative.

Case 2. Female, aged 57, obese, appeared moderately ill. She gave a history of increasing chronic constipation for one year. She had had much difficulty in moving bowels for last three weeks and had noticed tarry stools during that period. Thirty-six hours previous to admission she developed severe cramping pains in the lower abdomen. Abdominal distention was unrelieved with physics and pituitrin. Examination of abdomen revealed considerable distention and tympanites; there was no visible peristalsis. Rectal and vaginal examination showed no abnormalities. Red cell count was 4,600,000; Hg. 90 per cent; white cell count 6,800. Benzidine test was four plus. By sigmoidoscopic examination no tumor was visible in the rectum or rectosigmoid region. Frequent hot enemas were given for four days and obstruction was released. Barium enema revealed filling defect in the pelvic colon. On May 29, Devine colostomy and exploration revealed smooth liver, no palpable lumbar glands and a firm, hard, partially fixed tumor mass 4 cm. in diameter in lower pelvic colon. On June 18 resection of carcinoma with end to end anastomosis was done under spinal anesthesia. Diagnosis was adenocarcinoma, grade II. On July 8, crushing clamp was applied to colostomy spur. On July 20, she was discharged in good condition, colostomy openings contracting down, bowel movements good.

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#### CHILDREN UNKNOWNLY MAY HAVE SERIOUS HEARING HANDICAPS

Children may have serious hearing handicaps for years without knowing it, Constance J. Foster, New York, points out in *Hygeia, The Health Magazine* for December.

"Never having heard normally," she explains, "the child has a poor basis for comparing himself with other children and fails to realize why he is different. He may learn to compensate for his deficiency by cleverly increasing the alertness of other senses, so that the parent is deceived, is even unaware of any defect."

Some of the symptoms which should be regarded as suggestive of ear difficulty include dulness, heaviness or a blocking sensation in the ears persisting for more than a few minutes, hearing better than others in noisy places, marked language retardation, asking frequently for the repetition of words and phrases, confusing similar sounds, distortion of speech out of proportion to the child's age, constant buzzing in the ears, vertigo or dizziness and failure to respond when called or to locate the source of sound properly. Other symptoms include headaches, fever, sweats, chills, acidosis, vomiting and coma, otherwise unexplained; tenderness, itching, heat or pain, deformities or swellings in or about the ears; moisture or discharge, running or odor from the external ear canal; facial spasm or paralysis, and allergic and neurologic symptoms correlated to any of the above manifestations.

"Other than congenital defects, most hearing difficulties can be prevented if the troubles from which they arise are recognized promptly and treated at their source," Mrs. Foster says.

## RELATIONSHIP OF ARTERIAL HYPERTENSION TO SURGICAL RISK IN BREAST CANCER

ANALYSIS OF 446 CONSECUTIVE RADICAL MASTECTOMIES

HYMAN R. SENTURIA, M.D.

ST. LOUIS

In any contemplated major operation the decision depends upon a proper balance between two opposing factors. First, the question of the urgency of the procedure must be considered. Is this an operation of choice or necessity? Second is the question of the operative risk. Can the patient withstand the operation with a good chance of survival? The answer to the first question is contingent upon the condition for which the patient seeks relief. In this group of cases it was cancer of the breast. Authorities are practically unanimous in the opinion that in the operable group radical breast surgery combined with some type of irradiation either preoperatively or postoperatively should be employed.

In seeking to arrive at some estimate of the risk attached to a certain operative procedure many clinical and laboratory findings need to be evaluated, particularly those concerned with the status of the cardiovascular system. Assuming that some type of radical procedure is indicated in the operable group of breast cancer, this study was undertaken to determine the importance of hypertension with or without cardiac disease in the determination of immediate postoperative mortality.

In this analysis the records of 446 consecutive cases of breast cancer who were operated on during the years 1937 and 1938, on the breast service of the Memorial Hospital, were studied with particular reference to the following features: age distribution, cardiovascular status, estimate of operative risk, hospitalization days, type of anesthesia and postoperative complications.

After analysis of the history and physical examination of these cases, both at the time of admission to the clinic and again on entrance into the hospital, ninety-five cases were classified as belonging to the hypertensive group. These cases were further subdivided into three groups depending upon the height of elevation of the blood pressure and the presence or absence of associated organic cardiac disease. An arbitrary lower limit was set at 170/90 in order to include only those cases which unquestionably would fall into the hypertensive group. Moderate hypertension was considered between the limits of 170/90 and 200/100 and severe hypertension 200/100 and over. (Table 1.)

Each individual case in this abnormal group was further classified as to the degree of operative risk after careful study of the cardiovascular history and the status of the cardiovascular system at the time of admission to the hospital. Cases were classified as

Table 1. Subdivision of Abnormal Cases With Regard to Cardiovascular Status

Group	Cardiovascular Status	Number of Cases
A	Moderate hypertension, 170/90 to 200/100	47
B	Severe hypertension, 200/100 and over	41
C	Cardiac condition with or without hypertension	7

relatively good, fair or poor operative risks on the basis of the following criteria: Those with no history of cardio-respiratory embarrassment, no previous history of hypertension and no abnormal cardiac findings but with a definite hypertension were considered as relatively good operative risks. Cases with moderate dizziness, a history of hypertension in the past but with no marked symptoms associated with hypertension and with an occasional albuminuria were considered as fair operative risks. In the last group which had history of and had had treatment for hypertension, with symptoms such as headache, retinal hemorrhages and dyspnea on exertion or a definite break in compensation at some time in the past, the operative risk was considered as poor. (Table 2.)

Table 2. Subdivision of Abnormal Cases Into Degree of Operative Risk

Group	Estimation of Operative Risk	Number of Cases
I	Relatively good	35
II	Fair	37
III	Poor	23

The immediate operative mortality in the entire series of 446 cases was seven or 1.57 per cent while in the special group of ninety-five cases, there was one fatality or 1.05 per cent.\* These statistics would point to a lower immediate operative mortality in the special group, a mortality in the first instance of 1.05 per cent as compared with 1.57 per cent for the second group.

That age is an important factor in mortality is shown by a study by Sprague<sup>5</sup> who found in an analysis of 170 cases with heart disease that two thirds of the deaths occurred in patients over 50. The single death in the selected group in this series occurred in a 63 year old white female. The age distribution in our special group of ninety-five cases is shown in table 3.

Table 3. Age Incidence

Age Groups	Number of Cases
30-39	2
40-49	14
50-59	35
60-69	36
70 plus	8

A brief investigation of the hospitalization days in this group showed that 55 per cent of the patients remained fifteen days inclusive while an additional

\*From the Breast Service of Dr. Frank E. Adair, Memorial Hospital for the Treatment of Cancer and Allied Diseases, New York City.

\*Two patients, both with severe hypertension, classed as bad operative risks, died a cardiac death since operation.

19 per cent were hospitalized for from sixteen to twenty days. In all, approximately 75 per cent remained in the hospital three weeks or less. Although no corresponding figures are available for the unselected group, this would seem to compare favorably with the routine postoperative stay as standardized for these cases.

Type of anesthesia apparently played no significant role in the immediate operative mortality in this group. This finding is corroborated by others who have investigated this factor. Hickman, Livingstone and Davies<sup>2</sup> in a study of 336 patients who underwent 345 operations found no correlation between anesthesia and operative mortality. In the series I am reporting fifty-six cases, or 63 per cent, had gas oxygen ether while eighteen cases, 20 per cent, had cyclopropane.\* The remainder had various combinations of avertin, gas, cyclopropane, ether and local nerve block.

The immediate postoperative complications other than those associated with wound healing were uncommon. (Table 4.)

Table 4. Postoperative Complications

Complication	Number of Cases
Cerebral accident with fatal termination	1
Unexplained temperature elevation, question of flare-up of preexisting arthritis	1
Postoperative shock	2
Postoperative atelectasis, mild	1
Left bundle branch block	1
Flare up of old rheumatism	1
Transient attack of fibrillation (24 hours)	1
Bronchopneumonia, mild	2
Urinary tract infection	1

The postoperative complications directly associated with the cardiovascular system were few in number. A case of cerebral accident with fatal termination occurred in a patient in the moderate hypertensive group, classified as a fair operative risk. A brief abstract of this patient's record follows.

#### CASE REPORT

L. K., white married female, aged 63, was first seen in the outpatient admitting clinic on April 22, 1938. Examination showed cardio-respiratory system essentially normal. The heart was not enlarged; moderate cardiac rate, regular rhythm and no murmurs. Blood pressure was 170/90. On April 29 the patient was admitted to the hospital ward where report of preliminary examination was that the heart was normal. The blood pressure was recorded as 172/98. Urine was normal. A right radical mastectomy was done on April 30 under gas-oxygen-ether anesthesia. The operative time was recorded at ninety-five minutes. On May 6, the sixth postoperative day, the patient suddenly collapsed and fell to the floor moaning. When seen by the ward physician the patient was in mild shock complaining of severe pain over the chest. Within five minutes a right sided spastic paralysis developed. The pulse remained thready and irregular. Following the administration of stimulants, the patient appeared some better. This improvement was only temporary as within the following hour the patient became cyanotic and irrational, complained of inability to get her breath and died rather suddenly. No

\*The use of cyclopropane has been discontinued entirely since.

autopsy was obtained. The final clinical diagnosis was cerebral accident with right sided hemiplegia.

One patient who developed a transient attack of fibrillation lasting for twenty-four hours had had several similar attacks previously so that the possibility of this being a coincidental development rather than a direct complication has to be considered. The case which developed the left bundle branch block was classed as a relatively good operative risk with no history of hypertension and no previous cardiac difficulties. On the ninth postoperative day the patient suddenly went into collapse with a blood pressure of 70/52 and with a pulse rate of 40 per minute. There was no pulse deficit. A more detailed and careful history revealed a story of recent attacks suggestive of transitory incomplete block. The subsequent electrocardiogram showed a typical left bundle branch block.

#### DISCUSSION

The question of surgical risk in patients with arterial hypertension with or without associated heart disease is a significant one in view of the lack of unanimity of opinion among medical and surgical consultants in dealing with this problem. The opinion has been advanced, without any corroborating evidence, that hypertensive patients, because of poor cerebral circulation and vasomotor instability, are somewhat more liable to surgical shock than normal patients and that they bleed more freely.

O'Hare and Hoyt<sup>4</sup> reported sixty-eight cases with vascular hypertension with blood pressures of from 150/90 to 245/175 in which operative death occurred in seven cases, a mortality of 10 per cent, and in only one of these could death be attributed to the vascular system. No radical mastectomies were listed among the types of operative procedures. They conclude that hypertension alone is not a prognostic guide but that such evidence of impaired cardiac function as cardiac pain, gallop rhythm and other signs of myocardial damage are.

McQuistan and Allen<sup>3</sup> studied the records of 350 patients with definite hypertension who had had major surgical operations at the Mayo Clinic. Among these were 100 cases of radical mastectomies. The patients were grouped into three divisions according to the height of the blood pressure: Group A, from 180/90 to 220/110; Group B, from 220/110 to 240/120, and Group C, above 240/120. Of the 350 cases 226 were in group A, eighty-eight were in group B and thirty-six were in group C. In the series of 350 cases there were nine deaths, or a mortality of 2.6 per cent, which approximated the mortality in the unselected group. Death occurred largely as a result of the complications of hypertension only three times or in 0.86 per cent. Operations in the thirty-six cases in group C with blood pressures greater than 240/120 were accomplished without a single mortality. They suggest that those patients with extreme hypertension may be better surgical risks

than those with moderate elevation of blood pressure. In my series, the group of forty-one cases with hypertension greater than 200/100 did not include a single postoperative mortality. They conclude that patients with all grades of hypertension without obvious or with mild myocardial and renal insufficiency withstand surgery as well as the unselected group. Attention is called to the fact, which is observed in my series, that patients with severe hypertension frequently die within a period of two years after operation as a result of the complications of hypertension.

Butler, Feeney and Levine<sup>1</sup> studied the relation of blood pressure to mortality in a series of 414 patients who underwent 494 operations. These cases were divided into two groups according to the height of blood pressure, 160 mm. of mercury being chosen arbitrarily as the dividing line. The first group totalled 245 patients with blood pressure below 160 mm. with 286 operations and a mortality of 5.9 per cent. The second group comprised 146 patients with blood pressure greater than 160 mm. of mercury with 177 operations and a mortality of 7.3 per cent. In view of the slight difference in the mortality in these two groups they consider that the height of the blood pressure alone has little influence on the mortality rate and that even patients with a very high blood pressure, uncomplicated, were, in general, good surgical risks. Sprague<sup>5</sup> studied 170 cases with proved cardiac conditions operated on in a ten year period, on whom 192 operations had been performed, and found no correlation between anesthesia and mortality or between mortality and preoperative blood pressure. No patient died during or following operation from cerebral hemorrhage although nineteen had a systolic blood pressure of over 200.

Hickman, Livingstone and Davies<sup>2</sup> studied the immediate and postoperative reactions to anesthesia and operation of 336 consecutive patients with cardiac disease. Among ninety-one patients with hypertension there were only three deaths due to cardiac disease. Each of these three patients was classed as a poor operative risk. They concluded that as a group patients with cardiac disease are fairly good surgical risks.

From this brief review of the available literature on the subject, it would seem that there is an agreement among the contributors as to the lack of any extraordinary risk in the compensated cardiac and hypertensive patients. In general, the hypertensive heart, as well as the fully compensated heart, with or without valvular disease, can tolerate major surgery very well.

#### CONCLUSIONS

1. In a series of 446 consecutive cases of radical surgery for breast cancer the immediate postoperative mortality in the special group with hypertension did not vary significantly from that of the unselected group, (1.05 per cent and 1.57 per cent).
2. In the special group there were forty-one cases

of severe hypertension who underwent radical breast surgery without a single fatality.

3. In view of the tendency on the part of those patients with extreme hypertension to die as a result of the complications of hypertension within a varying period after operation before the cancer has run its natural course, special consideration must be given to this factor when contemplating radical breast surgery.

4. Determination of the operative risk is dependent not so much on the degree of elevation of the blood pressure but, rather, on the functional status of the cardiovascular system. This is established by a study of the ability to carry on a normal activity without evidence of cardio-respiratory stress.

5. There is no evidence to indicate any correlation between operative mortality in this group and type of anesthesia.

I wish to acknowledge the patient advice of Dr. Frank E. Adair, Director of the Breast Service, whose interest in this problem served as a stimulus for this investigation.

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#### JOURNAL RECOMMENDS NURSES' SCHOOLS SHOULD TEACH INDUSTRIAL HYGIENE

Courses in industrial hygiene for undergraduate and graduate students should be started at once by schools of nursing, *The Journal of the American Medical Association* for December 14 declares in an editorial which points out that with the speeding up and intensification of industry now taking place in connection with the national preparedness program many more industrial nurses will be needed than are now available.

"Competent industrial health service depends on the availability of physicians adequately trained in industrial medicine, hygiene and traumatic (injuries) surgery," *The Journal* says. "Ordinarily, however, assistance is necessary from other properly qualified professional personnel. Industrial medical departments provide excellent opportunities to nurses with proper aptitude, good comprehension of public health nursing methods and a sure sense of their own professional limitations. A clinical and administrative assistant of this character will be of immense aid to any industrial physician in the performance of many routine functions which make up the bulk of industrial dispensary procedure.

"The system works admirably under whole-time industrial physicians or under part-time physicians who spend regular visiting hours at a plant. In the absence of direct medical supervision, written standing orders, properly posted in the plant medical unit, will do much to inhibit assumption of services which require expert medical attention. Some form of medical supervisory arrangement is necessary to provide nurses with technical advice. The physicians on call for first aid and compensation work may be most helpful, particularly if they have some insight into the actual working environment."

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JANUARY, 1941

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## EDITORIALS

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### THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

### WAR MEDICINE IS NEW PUBLICATION

Beginning in January, the American Medical Association will publish a new journal, *War Medicine*, as a part of the medical preparedness program. The new publication which will be published bi-monthly will carry material useful to government services, which have indicated their desire to have the periodical for their official departments, to libraries and individual physicians. The subscription price will be \$5.00.

The Division of Medical Sciences of the National Research Council has developed a number of scientific committees which are actively at work preparing reports of various phases of medical service under military conditions. These official documents will be available for prompt publication. Reports on chemotherapy, standardization of treatment of pneumonia, numerous problems concerned with medicine in aviation, peripheral nerve injuries other than spine and brain, wound treatment, gas gangrene and similar subjects have been made available.

Official reports of the Committee on Medical Preparedness of the American Medical Association, which is concerning itself with all the questions of personnel for preparedness and military service, will appear in the new periodical as well as special considerations of economic and social problems of the medical profession in relationship to the emergency. Reports of other official committees of the American Medical Association which will be concerned with these problems, as the Council on Medical Education and Hospitals and the Council on Industrial Health, will be included.

Much material is being developed by the Coordinating Committee on Medicine and Health of the Council on National Defense and by many other governmental agencies which are considering the national nutrition, the provision of hospital services and similar questions closely related to preparedness and defense.

The Committee on Information of the Division of Medical Sciences of the National Research Council will be the editorial board. This committee includes Dr. Morris Fishbein, Chicago, chairman; Mr. J. R. Bloomfield and Drs. John F. Fulton, Richard M. Hewitt, Ira V. Hiscock, Sanford V. Larkey and Robert N. Nye. In order to have direct cooperation with government services, the following representatives of the Army and Navy Medical Corps and the United States Public Health Service will cooperate with this editorial board: Col. C. C. Hillman, Com. Charles S. Stephenson and Dr. R. R. Spencer.

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### ARMY WILL REQUIRE 9,100 PHYSICIANS BY NEXT SPRING

A total of 9,100 physicians, of whom 5,300 must be procured during the next few months, will be required for the total strength of the army of the

United States next spring, which will be approximately 1,400,000 men, the surgeon general of the Army declared in an outline regarding the participation of the Army Medical Department in the 1940-1941 military training program, published in *The Journal of the American Medical Association* for December 7.

The surgeon general says that the 1,400,000 men will represent a Regular Army of 400,000 officers and men, the National Guard of the several states federalized as the National Guard of the United States, numbering 200,000, and citizens selected for military training during the coming twelve months—about 800,000 in number.

"The Medical Department is charged with providing adequate medical service for the entire Army of the United States at posts, camps and stations within and beyond the continental limits of the United States," he declares. "In each military station in the United States there will be a hospital with four beds for each hundred of the military population. The operating room, kitchen, messing facilities and clinics in each of these hospitals will be of sufficient size to provide service for an additional patient per hundred men so that in an emergency it will be necessary to construct only the additional ward buildings. Furthermore, there will be general hospitals suitably located throughout the United States to provide an additional bed per hundred thousand of the military population.

"The provision of 5 per cent of hospital beds which can be rapidly expanded to 6 per cent may appear excessive when compared with hospitalization provided for the civilian population of this country. However, all of the military sick, including such cases as in civilian life are ordinarily cared for in their homes, must be treated in hospitals, since they cannot receive satisfactory care in the barracks. In addition, when young adults are brought together in large groups, contagious and infectious diseases that spread rapidly under such conditions occur much more frequently than in civil life. Furthermore, sufficient beds must be provided for the care of the sick during the winter and spring seasons of the year, when there is always an excessive number of such cases.

"The Medical Department will be charged with the training of the medical detachments and the medical department units of the Regular Army and the National Guard, and with the instruction of the service personnel in hospitals and other installations. It is also responsible for the preparation of the trainees in enlisted replacement centers, in hospitals and in service schools, who will receive there the individual Medical Department instruction which will permit their incorporation in organizations for further unit training.

"The initial requirement will be approximately 6.5 doctors for each thousand men in the military service. Rapid calculation will show that the total number for an army of 1,400,000 men will be 9,100 doctors. Additional ones may be required, but in

the interest of economy the initial procurement will be limited to the number stated. The 1,200 physicians in the Regular Army and the 1,100 in the National Guard are included in the total, leaving approximately 6,800 physicians to be supplied by the Reserve Corps. There are now in active service or under orders approximately 1,500 Reserve physicians, leaving 5,300 to be procured during the next few months."

Discussing the work of the American Medical Association in connection with the preparedness program, the statement says:

"The Surgeon General of the Army, through Lieut. Col. George C. Dunham, the representative of the Medical Department in the House of Delegates, submitted a request to that body at its last meeting in New York, in June 1940, requesting the assistance of the American Medical Association in the classification and procurement of physicians for the Army. It was hoped in this way to procure the physicians required without disturbing too seriously the civilian medical service and at the same time to place the physicians enrolled in positions for which their previous training qualified them. The House of Delegates approved the request of General Magee and appointed a Medical Preparedness Committee. The U. S. Navy and the U. S. Public Health Service made similar requests.

"Reference has been made to the action of the House of Delegates and to the working of the Preparedness Committee in previous issues of *The Journal*. The Preparedness Committee, the executive officers of the American Medical Association and the chairmen and members of the various state and local committees have all given generously of their time and funds in this work. They have been of material assistance to the Surgeon General and corps area surgeons in the classification and procurement of Reserve Corps medical officers. They generously have offered their assistance in similarly classifying and procuring such physicians as may be required in addition to those in the Reserve Corps. Although the majority of appointments of additional Reserve officers for active duty at this time will be 35 years of age or under, a limited number of properly qualified physicians above this age will be required as chiefs of services of the many large hospitals to be established.

"The history of our country has repeatedly shown that there is no more patriotic group than the American physicians. They have always responded generously to their country's call for assistance. At this time, although this country is not engaged in war, the national preparedness program requires an adequate medical service. Without it, the program will be hampered materially. In addition to the adequate care of the sick and protection of the health of our young men in the camps, the Medical Department must be able to train its personnel to act in conjunction with the troops of the other arms and services so that in time of battle, if unfortunately that time should come, it may be

able to collect efficiently and evacuate promptly casualties that occur on the battlefield so that each one may receive as promptly as possible efficient medical care. Let us repeat: The success of the national preparedness program depends to a large extent on adequate medical service. American medicine appreciates its obligations and will furnish a sufficient number of properly qualified physicians."

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## NEWS NOTES

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Dr. Dan W. Myers, St. Louis, spoke before the Trudeau Club of St. Louis on December 5 on "Interlobar Empyema."

Dr. Richard S. Weiss, St. Louis, was elected president of the American Academy of Dermatology and Syphilology at the annual session of the academy in Chicago in December.

Dr. Sam H. Snider, Kansas City, was a guest of the Central Kansas Medical Society at Russell, Kansas, on December 5. He spoke on "An Evaluation of Diagnostic Measures in Tuberculosis."

Dr. Claude J. Hunt, Kansas City, was named chairman of the Section on Surgery of the Southern Medical Association at its meeting in Louisville, Kentucky, November 12 to 15.

Dr. Carl R. Ferris, Kansas City, was a guest of the Sorosis Club of Sedalia on November 18 and spoke on "What Is Socialized Medicine?" In the evening he spoke before the Pettis County Medical Society on "Prepaid Medicine."

Dr. August A. Werner, St. Louis, presented one of the Max Ballin Memorial lectures in Detroit on November 22. These lectures are sponsored each year by the North End Clinics, Detroit. Dr. Werner's subject was "Recent Advances in Endocrinology."

Drs. Damon O. Walthall and F. A. Carmichael, Jr., Kansas City, were guests of the Miami County (Kansas) Medical Society at Paola, Kansas, on November 13. Dr. Walthall spoke on "Staphylococcus Infection and Its Response to Staphylococcus Antitoxin and Chemotherapy" and Dr. Carmichael on "Head Injuries."

Dr. Lawrence T. Post, St. Louis, was the guest of honor at a dinner given by the St. Louis Ophthalmic Society on November 27. The dinner was an expression of appreciation of the society for the service of Dr. Post as editor of the *American Journal of Ophthalmology*, from which position he recently retired.

Drs. Orval R. Withers, Kansas City, and French K. Hansel, St. Louis, will appear on the third Annual Forum on Allergy to be held in Indianapolis, Indiana, January 11 and 12. Dr. Withers will speak on "Specific Treatment of Allergic Headache," and Dr. Hansel on "The Allergic Coryza." Registration for the session is required prior to the meeting and should be directed to Dr. Tell Nelson, 636 Church Street, Evanston, Illinois. The registration fee is \$5.00.

The Committee on Scientific Exhibits for the Annual Session of the Association, which will be held in St. Louis, April 28, 29 and 30, 1941, will be glad to receive requests for space for scientific exhibits, either by individuals or organizations. Applications should give an outline of the subject matter to be covered and figures on floor and wall space necessary to display the exhibit properly. Applications should be addressed to Dr. Ralph R. Coffey, Chairman, 1324 Professional Building, Kansas City.

The transparent woman exhibit, sponsored by S. H. Camp & Company, has been donated to the Medical Section of the Museum of Science and Industry, Chicago. Dedication ceremonies were broadcast. Taking part in the ceremonies were Dr. Morris Fishbein, Chicago, Editor of the *Journal of the American Medical Association*; Dr. Eben J. Carey, Curator of the Medical Section of the Museum and Dean of the School of Medicine of Marquette University; Major Lenor R. Lohr, President of the Chicago Museum of Science and Industry, and Mr. S. H. Camp. It is estimated that approximately eight million persons, including many thousands of physicians, viewed the exhibit during its public health educational tour during the last four years.

Dr. Frank L. Rector of the American Society for the Control of Cancer gave a two weeks' lecture tour of high schools and colleges in Missouri during December. The lectures were under the sponsorship of the Woman's Field Army of the American Society for the Control of Cancer which was organized four years ago to conduct annual educational and enlistment campaigns. Dr. Rector, a graduate of the Medical School of George Washington University, Washington, D. C., has spent his entire professional life in health education work and its related fields. During the last ten years he has been associated with the American Society for the Control of Cancer serving in the capacity of field representative. In connection with this work he has made cancer surveys in eight midwestern states, one of which is Missouri, and has lectured in approximately 200 high schools and colleges on cancer and cancer control. Dr. Rector presented lectures in Marshall, Slater, Liberty, Fulton, Kansas City, Warrensburg, Iberia, Jefferson City and Tarkio.

The third annual Congress on Industrial Health sponsored by the American Medical Association will be held January 13 and 14 at the Palmer House in Chicago. The meetings will be open to all physicians and others interested in the industrial health movement. There is no registration fee. Special sessions will be held on "Hand Injuries," "Availability of Trained Industrial Health Personnel," "Acute Respiratory Disease in Industry" and "Industrial Ophthalmology." Among other papers to be presented are "The Physician in Industry and National Defense," "Current Needs in Industrial Hygiene Research," "The Special Nature of Industrial Practice," "Disability Evaluation in Silicosis," "Employment of the Physically Handicapped" and "Aging as a Problem of Industrial Health." On the first evening of the session an informal dinner and round table discussion intended primarily for state and county medical society committees on industrial health will be held. The subject matter for discussion will include problems of organization and plans for future activity. Members of the Committee on Industrial Health of the Missouri State Medical Association are Drs. E. C. Funsch, St. Louis, Chairman; G. T. Bloomer, St. Joseph; H. I. Spector, St. Louis; W. M. Kinney, Joplin, and J. E. Castles, Kansas City.

## THE STATE BOARD OF HEALTH

### Missouri Pneumonia Control Program

A cooperative pneumonia control program was started last year in the eight counties having full time County Health Units. In this program the State Board of Health cooperated with the physicians by furnishing laboratory facilities, sulfapyridine and type specific serum, where indicated, for patients unable to provide these things for themselves.

Although the program did not get under way until February 1940, it was well received as shown by the fact that it was used in 177 cases of pneumonia, 102 home and 75 hospital cases, with a combined mortality of 5.21 per 100 cases. In view of the experience gained, it has been deemed advisable to attempt the program on a state wide basis.

Pneumonia control centers have been designated in various parts of the state. In some, pneumonia typing facilities will be available and in others the sputum must be sent to the State Board of Health laboratory for typing. A sputum specimen must be obtained by the doctor on each case before treatment is started.

Each designated typing control center will be supplied with sulfapyridine, sputum containers, blood culture bottles containing special broth media, oxalate tubes for taking bloods for determination of blood levels and necessary record forms for reporting and keeping case histories.

The nontyping control centers will be supplied with sulfapyridine, sputum containers and neces-

sary record forms for reporting and keeping case histories.

In order to secure the sulfapyridine it will be necessary for the physician to furnish the control center a specimen of sputum for typing. The type pneumococcus is to be determined in each case and after a period of from twenty-four to forty-eight hours has elapsed with no clinical improvement under sulfapyridine, type specific serum will be supplied on the basis of 100,000 units per patient, except in pregnancy cases when greater amounts are sometimes needed.

As rapidly as administrative experience is gained, the program will be extended in the hope that every physician may be provided with these therapeutic agents.

The physician on the case will determine whether or not the patient is able to provide this service for himself and will provide the control center with a final case report upon the completion of the case.

It is expected that physicians of the state will cooperate fully in assisting the State Board of Health with the records and reports so that the prevailing type of pneumococcus present in the State and the effectiveness of this program may be determined.

The designated control stations are as follow and the material supplied may be obtained from these control stations:

Ava, Douglas County Nursing Unit, Edna Haase, R.N.  
Bolivar, Polk County Nursing Unit, Clar W. Dewhirst, R.N.  
Boonville, St. Joseph Hospital Laboratory.  
Cameron, District Health Office, No. 11, L. F. Weyenrich, M.D.  
Cape Girardeau, St. Francis Hospital Laboratory.  
Caruthersville, Pemiscot County Health Unit, F. L. Ogilvie, M.D.  
Cassville, Barry County Nursing Unit, Marjorie Sallee, R.N.  
Chillicothe, Chillicothe Hospital Laboratory.  
Clayton, St. Louis County Health Unit, T. R. Meyer, M.D.  
Dexter, District Health Office No. 2, T. L. Waddle, M.D.  
Doniphan, Ripley County Nursing Unit, Thelma Sheridan, R.N.  
Fayette, Lee Hospital Laboratory.  
Fredericktown, District Health Office No. 4, E. M. Bryan, M.D.  
Fulton, Callaway County Nursing Unit, Iva Morrow, R.N.  
Grant City, Worth County Nursing Unit, Gladys Warren, R.N.  
Hannibal, Marion County Health Unit, E. M. Lucke.  
Harrisonville, Cass County Health Unit, E. M. Griffith, M.D.  
Hartville, Wright County Nursing Unit, Elyse Hay, R.N.  
Higginsville, District Health Office No. 8, J. R. Amos, M.D.  
Hillsboro, Jefferson County Nursing Unit, Anna Thiessen, R.N.  
Independence, Jackson County Health Unit, W. F. McCarthy, M.D.  
Ironton, St. Marys of the Ozarks Hospital Laboratory.  
Jefferson City, State Board of Health Laboratory.  
Kahoka, Clark County Nursing Unit, Ethel DeLozier, R.N.  
Kirksville, District Health Office No. 10, E. V. Davis, M.D.

Lebanon, Wallace Memorial Hospital Laboratory.  
Liberty, Clay County Nursing Unit, Florence Knichel, R.N.  
Louisiana, Pike County Hospital Laboratory.  
Marshall, John Fitzgibbons Hospital Laboratory.  
Marshfield, Webster County Nursing Unit, Charles Depew, R.N.  
Maryville, St. Francis Hospital Laboratory.  
Moberly, Office of T. C. Fleming, M.D., Gertrude Minter, Technician.  
Monett, District Health Office No. 6, E. W. Cline, M.D.  
Monticello, Lewis County Nursing Unit, Bessie Wilson, R.N.  
Mt. Vernon, Lawrence County Nursing Unit, Lucille Spencer, R.N.  
Nevada, Nevada Hospital Laboratory.  
Osceola, District Health Office No. 7, Stephen Kaimmer, M.D.  
Owensville, District Health Office No. 9, H. S. Miller, M.D.  
Pineville, McDonald County Nursing Unit, Paula Cook, R.N.  
Platte City, Platte County Nursing Unit, Opal Tunnell, R.N.  
Potosi, Washington County Nursing Unit, Margaret Hamlin, R.N.  
Richmond, Ray County Nursing Unit, Grace Burns, R.N.  
Rock Port, Atchison County Nursing Unit, Minnie Strobel, R.N.  
Rolla, State Trachoma Hospital.  
Salem, District Health Office No. 5, S. B. Beecher, M.D.  
Sedalia, Bothwell Hospital Laboratory.  
Springfield, Greene County Health Unit, E. C. Mulliniks, M.D.  
Steelville, Crawford County Nursing Unit, Mary Belken, R.N.  
St. Joseph, St. Joseph City Laboratory.  
Trenton, Wright Memorial Laboratory.  
Tuscumbia, Miller County Health Unit, L. M. Garner, M.D.  
Waynesville, Pulaski County Nursing Unit, Dorothy Deane, R.N.  
Webb City, Jasper County Health Unit, C. W. Meinershagen, M.D.  
West Plains, Office of E. R. Bohrer, M.D., Technician.

#### Missouri Gonorrhea Control Program

In cooperation with the United States Public Health Service, the State Board of Health of Missouri and the Committee on Control of Venereal Disease of the Missouri State Medical Association have deemed it advisable to make sulfathiazole available for the treatment of patients suffering from gonorrhea. This chemotherapeutic drug seems to give a high percentage of cures and has a relatively low toxicity. It will be made available on the same basis as is now being used to provide treatment for syphilis.

Sulfathiazole will be made available to private physicians from full time county or district health officers on the receipt of a venereal disease report form reporting a case of gonorrhea and requesting drugs for treatment. The plan of treatment outlined by the Committee on Control of Venereal Disease of the Missouri State Medical Association will be used. This consists of the oral administration of 15 grains of sulfathiazole four times a day (60 grains a day) for a period of five successive days.

A second course of drugs is not advised in event of failure.

In order to facilitate diagnosis, urethral or cervical smears must be made and sent to the State Board of Health laboratory or other approved laboratories of all cases of gonorrhea, suspected or reported by the physician.

That the magnitude of the problem in the control of gonorrhea may be judged more nearly, the physicians of the state are urged to report all cases of gonorrhea coming to their attention in their practice.

Because the State Board of Health is financially accountable for all drugs purchased through their facilities with state and federal funds, it will be required that a treatment record on record Form 11-A be kept on all cases furnished drugs by the State Board of Health. These records are to be sent to the district or full time county health officers at the completion of the treatment or within ninety days with a notation as to the outcome of the case.

It is urged that all possible means be used to make an epidemiological study of each case with an effort to trace all sexual contacts and get all new cases under treatment. The facilities of district and full time county health officers and their nursing staffs will be available to assist the physician in this if he desires this service and he is urged to make full use of these facilities.

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## DEATHS

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**Mitchell, Sherill, L., M.D.**, Rolla, member of the Phelps-Crawford County Medical Society; Fellow of the American Medical Association; aged 78; died September 30.

**Anderson, Arthur L., M.D.**, Springfield, graduate of the University Medical College of Kansas City, 1900; former member of the Greene County Medical Society; aged 65; died October 25.

**Peery, Charles L., M.D.**, Kansas City, graduate of Barnes Medical College, St. Louis, 1911; member of the Jackson County Medical Society; aged 67; died November 19.

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#### BIRTHDAY PILGRIMAGE TO WILLIAM BEAUMONT'S GRAVE

The St. Louis Medical Society's Annual Pilgrimage to William Beaumont's Grave was held on Thanksgiving Day, November 21, 1940, at 11 a. m.

Dr. Robert E. Schlueter opened the exercises with appropriate remarks and then introduced Mr. Walter J. Grolton, Superintendent of the St. Louis City Hospital, who placed a wreath on the grave for Mayor Bernard F. Dickmann. This was followed by another wreath from the Southern Medical Association by Dr. Alphonse McMahon, Councilor and Chairman of the Executive Committee of that Association. Dr. Cyrus E. Burford deposited a wreath as President of the Missouri State Medical Association and Dr. Herbert S. Langsdorf did likewise as President of the St. Louis Medical Society.

Reverend Alphonse M. Schwitalla, S. J., Dean of St. Louis University School of Medicine, then spoke as follows:



"The lives of the great men are characterized by an ever recurring timeliness. Their memory may sink into temporary oblivion but sooner or later that memory rises again with rejuvenated vigor to form an inspiration to a new generation. Centuries may elapse, long periods of history may pass into eternity but the truly great live on to be resurrected in moments when mankind needs the stimulation of their lives.

"Measured by this criterion, William Beaumont was great as he has so often been pronounced great when measured by many other criteria. If at times we have honored him as the embodiment of daring scientific research in an era that scarcely knew the meaning of the term; if at other times we have honored him as the pioneer in medical practice, in primitive regions in which medical practice was characterized by lassitude rather than by aggressiveness; if at still other times we have honored him as a vigorous and challenging champion of what is right in government in an era when men were prone to accept things as they came; I invite you today to honor him as the prototype and patron of medical service in a moment of national emergency.

"We are in the midst of a national emergency today. Hopefully and perhaps fearfully, we still call it a moment of national preparedness but that the moment is grave no one who reads the signs of the times can doubt and in that emergency, in that grave moment, Medicine has her place to play. As never before in world history or in world movements, Medicine is called upon to take her part in the national need. If at other times we have entered precipitately into war and then mobilized our medical service as an after-thought; if at other times military needs were thought to be paramount with medicine only as the servant of the military command; if at other times we forgot the medical needs of a civilian population amidst the precipitateness of our preparation for war; we witness today in this moment of triumph of Medicine, that medical preparedness and military preparedness as equal partners in a nation's struggle for the safeguarding of her ideals are the slogan of the day. This is the moment in which the spirit of William Beaumont can glory. In this triumph, his soul would have felt the enthusiastic satisfaction of a crusader. Of this spirit, I hold up before the admiration of his medical colleagues, the life and the work, the labors and the studies of the man whose memory we have come here to honor. I want him up before you as the embodiment of the true spirit of the military physician.

"The temptation may be strong upon us to follow him from Plattsburg to Mackinac, from Crawford to Jefferson Barracks; to follow him through the War of 1812; the Indian Wars of 1826 and the Black Hawk War of a later date, but this is not the moment for biography. The temptation may be strong upon us to follow him in his practice in Vermont and Wisconsin, in New York and Missouri, but again this is not a moment for history. To me, as I stand here over his grave, he is the embodiment of the thought which we are today attempting to

bring with emphasis and prominence into national policies, the thought that the soldier is still a man and that soldiering without Medicine which cares for the man is a debasement of God's grandest creatures. To make a soldier is more than to make a target for cannon or rifle ball, more than to prepare serried ranks for offense or defense, more than merely to form a deploying column that can retreat or advance at the voice of command. To make a soldier as we view our ideal in a democracy is to lend a new dignity to manhood, to create a captain of the people, a protector of human rights, to make a man who is captain of his own soul. Military science alone cannot do this but military science aided by Medicine as Medicine emphasizes the dignity of the individual can achieve that miracle which embodies the national ideal of the moment.

"It was for this ideal that the whole life of William Beaumont stood; it was for the realization of this ideal that he bore the taunts and gibes of those who regarded him as a visionary; it was for this that he bore the ingratitude and faithlessness of the patient himself whom Beaumont's own labors were to immortalize; it was for this ideal that he bore even the severance from the Army in what must have been disgrace, from the Army to which he had given the best years and labors of his life; it was for this ideal that Beaumont kept his life clean and unsullied so that even the penetrating criticism of almost a century of students failed to find ought in him but sturdiness and moral strength. His defense of the man in the soldier, his interpretation of human rights in military discipline, his daring strength in the face of danger, his solicitude for morale and moral purity in the face of debauchery were all the expression of his own ideal that military dignity implies first and foremost the majesty of man.

"To this ideal, we to whom Medicine is the sunlight of life, Medicine with its ideals of human dignity, moral uprightness, manly strength, courage, determination, the reverence of religion, we, I say, re-dedicate our lives at the grave of one whose life was filled with the things for which it is our glory to stand and which it is our pride to defend. May our beloved nation in this hour of her need remember that we have produced a Beaumont. In that thought lies strength and confidence."

The following representatives were then introduced: Colonel M. A. Reasoner, from the William Beaumont General Hospital, U. S. A., at El Paso, Texas; A. H. Jones, D.D.S., from the St. Louis Dental Society; Mr. A. H. Huntington, Principal of the William Beaumont High School; and Dr. P. M. Nabbe, from the Post Hospital at Jefferson Barracks, Mo.

Dr. Schlueter closed the ceremonies with:

"Farewell, William Beaumont! On this day of Thanksgiving we have come to express our appreciation for the valuable legacy which you left us. May your body rest in peace, but your noble spirit abide with us, to stimulate the members of your beloved profession to greater achievements in medical science."

Taps were then sounded by Edward Guetebier and John Dengler from the William Beaumont High School, under the direction of Mr. Ernest Prang Stamm.—Reprinted from the *Weekly Bulletin of the St. Louis Medical Society*, November 29, 1940.

## OBITUARY

A. L. ANDERSON, M.D.

### AN APPRECIATION

I first knew Dr. Anderson in 1921 when he was a patient at the Augustana Hospital, Chicago. I was surgical resident at the hospital and Dr. Anderson was assigned to me. Because of his genial character and ever friendly, cheerful disposition we quickly became friends. At once I was struck by his high ideals,

scholarly attainments, wide reading, remarkably retentive memory, splendid reasoning ability and his amazing diagnostic acumen. Dr. Anderson was a patient during the summer when medical students were assigned to the hospital for practical study. When Dr. Anderson was able to be up, he made the acquaintance of the students. The hospital staff noted how interested they were in talking over cases with him and it occurred to the staff that it would be nice if he were given the chance to conduct a few teaching rounds for them through the open wards. This he did and he was in great demand. The students enthusiastically proclaimed him a clinical teacher second to none. They appreciated his quick, simple and direct approach backed up by a background of experience from which he was so unusually able to profit. This was a remarkable tribute to a man who had previously had no opportunity to teach and whose efforts further were entirely extemporaneous.

Later Dr. Anderson enticed me to Springfield where I have had the privilege of knowing him intimately during the last seventeen years. It is difficult to list his many fine qualities because of his versatility. He was a very human person, full of life, joy and energy, good natured, friendly and capable of the fullest enjoyment from human relationships. As a friend he was deeply loyal. He had a fine sense of humor. No matter how dark things might seem he was always able to take a few moments off for laughter and the enjoyment of a good joke. His hearty, ringing laughter will be long remembered. His ideals as a citizen and physician always amazed me. Dr. Anderson worked his way through college and medical school and upon graduating from the University Medical College of Kansas City in 1900 he went directly into practice, taking a position as company doctor for a coal company in Oklahoma. There he began to train himself to do laboratory work, especially that concerned with blood examinations, a field that was then a pioneer one. With the help only of a textbook he worked out and mastered the details of blood examinations. This required high ideals, a burning ambition to improve, determination and persistence to improve no matter how great the obstacles and the mental ability to hurdle these difficulties and achieve the goal set by his ambition. Few could have done this. I know of no one else who has.

Because of his continued studying, his determination to keep fully abreast of progress and his ability to do so under all circumstances, he became outstanding as an internist in a short time after going to Springfield. And because he never let himself get left behind by scientific progress, he remained outstanding. The medical profession in Springfield often has said that in an obscure difficult case no one's opinion is as valued as that of Dr. A. L. Anderson. He helped to elevate the general level of medical practice in his community by teaching and inspiring his colleagues to do better work and by setting an example of high ideals. I am firmly convinced that had Dr. Anderson chosen to locate in any city, no matter how large or how important as a medical center, he would have been outstanding in that locality. He never forgot anything he read or saw; he possessed a keen reasoning ability; his standards were of the highest; his ambition and determination ever to improve never flagged, and he had boundless energy. Dr. Anderson was anything but mercenary. He was charitable with whatever worldly goods he might possess, with his services as a physician and in the judging of other people. His ethics were irreproachable. I never knew him to do a discreditable or dishonest act.

A number of doctors owe their start in Springfield to Dr. Anderson. He was always happy to single out a newcomer and help him get started in his special line of work. To do this, he not only would speak a good word to people at large and the medical profession in particular, but referred some of his own cases to the

newcomer. Dr. Anderson was utterly unselfish, unselfish toward colleagues, toward patients, toward the public and unselfish of himself. In his last years declining health failed to undermine his unselfishness and failed to dim his cheerfulness, buoyancy and uncomplaining acceptance of fate.

Dr. Anderson possessed other sides. He was a wide reader, often reading until the early morning hours. He was a great philosopher and an honest and fearless thinker. He had splendid musical ability and appreciation and sang a fine tenor. He had unusual literary talents. On the spur of an enchanted or inspired moment he could dash off splendid and touching poetry. Other times prose suited his purpose and it was always good prose whether it be a pure literary effort or a matter of exposition. His medical papers were for this reason always especially clear.

Above all, Dr. Anderson had the gift of great capacity for friendship. Truly his talents and fine characteristics were both great and many. His going is deeply mourned by his community and the profession.

F. T. H'DOUBLER, M.D.

#### SAYS RHEUMATIC FEVER SHOULD BE MADE A STRICTLY REPORTABLE DISEASE

Rheumatic fever and rheumatic heart disease should be made strictly reportable, in order that the public may come to realize the seriousness of the public health problems which they represent and the necessity of widely extending the facilities for their treatment, Homer F. Swift, M.D., New York, recommends in *The Journal of the American Medical Association* for November 2.

Public recognition of the nature and requirements of the problems of such disease, he says, has lagged far behind the attention given to other diseases of less numerical and economic importance. Some idea of its importance as a cause of death is gained from an analysis of data acquired in 1938 in New York, with requested reporting of rheumatic fever as a causative factor in death from heart diseases. There was a ratio of 4.5 deaths from rheumatic fever and rheumatic heart disease to each death from all of six reportable infectious diseases combined. These diseases are diphtheria, measles, whooping cough, scarlet fever, epidemic meningitis (inflammation of the membranes enclosing the spinal cord and brain) and infantile paralysis.

The most extensive efforts made in American cities to meet this problem have apparently only scratched the surface. For example, in New York City there are about 300 beds available to meet a situation probably demanding from three to five times as many for children alone. In such a city a permanent, supervisory and statistical organization should be provided which will have as its object the long-range study of the adequacy of prevention and treatment.

The long period usually consumed in the development of rheumatic heart disease offers opportunity for interfering with that development at various times, Dr. Swift points out. Obviously it is extremely important to treat adequately the younger rheumatic patients in order that the dangers of serious heart disease later in life may be lessened.

The chronic nature of the disease is extremely significant in determining proper facilities to combat it. For example, the author says that "under existing organizations a patient who requires chronic treatment is placed under conditions in which acutely ill individuals receive special attention. Certainly, transfer to outpatient care is not the proper answer to its requirements, and yet in many instances this is the only way of meeting the demands imposed by a large number of patients of all classes."

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL  
MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

Chariton County Medical Society, December 2, 1940.

Montgomery County Medical Society, December 2, 1940.

Perry County Medical Society, December 14, 1940.

Ste. Genevieve County Medical Society, December 17, 1940.

#### ASSOCIATE EDITORS: COUNCILORS OF THE TEN COUNCILOR DISTRICTS

#### FIRST COUNCILOR DISTRICT

##### A. S. BRISTOW, PRINCETON, COUNCILOR

##### Platte County Medical Society

The Platte County Medical Society met at Platte City, December 11.

The following officers were elected: President, Dr. Henry M. Clark, Platte City; vice president, Dr. Silas L. Durham, Dearborn; secretary-treasurer, Dr. Spence Redman, Platte City; delegate, Dr. Spence Redman, Platte City; alternate, Dr. Milton H. Moore, Dearborn.

The following committees were appointed: Public policy, Drs. Spence Redman, Platte City, Lewis C. Calvert, Weston, and Silas L. Durham, Dearborn; cancer, Drs. Milton M. Moore, Dearborn, Lewis C. Calvert, Weston, and Samuel P. Ford, Parkville; advisory to county nurse, Drs. Spence Redman, Platte City, Walter S. Wood, Edgerton, and Samuel P. Ford, Parkville; advisory to county court, Drs. Silas L. Durham, Dearborn, Lewis C. Calvert, Weston, and Spence Redman, Platte City; tuberculosis, Drs. Spence Redman and Henry M. Clark, Platte City, and Walter S. Wood, Edgerton; board of censors, Drs. Henry M. Clark, Platte City, Milton M. Moore, Dearborn, and Samuel P. Ford, Parkville.

SPENCE REDMAN, M.D., Secretary.

##### Nodaway-Atchison-Gentry-Worth Counties Medical Society

The Nodaway-Atchison-Gentry-Worth Counties Medical Society met for a dinner meeting at the Hotel Linville, Maryville, October 14, Dr. Clifton M. Waugh, Tarkio, presiding.

Members present were Drs. F. R. Anthony, Charles T. Bell, J. A. Bloomer, Leslie E. Dean, Loren E. Egley, W. R. Jackson, R. C. Person and William Wallis, Jr., Maryville; B. F. Byland, Burlington Junction; Charles D. Humbert, Barnard; Joseph C. Manning, Skidmore;

Eugene Crowson, Pickering; Charles W. Kirk, Hopkins; Charles E. Benham, John M. Davis, Charles H. Flynn, Claude D. Haskell and Clifton M. Waugh, Tarkio; Henry C. Bauman, Fairfax; Emmett B. Settle, Rock Port; Samuel E. Simpson, Stanberry; Mark H. Rhoads, King City; Pren J. Ross, Grant City. Guests were Drs. W. Logan Wood, Bolckow; J. P. Hiegler, Grant City; E. H. Skinner, Kansas City; Joseph H. Farrow, New York; B. S. Barnes, W. F. Stotler, F. D. Burdick and J. F. Aldrich, Shenandoah, Iowa; R. J. Matthews, Clarinda, Iowa; Edward Miller, Hopkins; Jesse Miller, Maryville, dentist; Mr. J. C. Manning, Jr., Skidmore; Miss Virginia Force, Kansas City.

Dr. Emmett B. Settle, Rock Port, discussed the bearing of world affairs on organized medicine and moved the appointment of a committee on medical preparedness. The following members were appointed: Drs. Charles T. Bell, Maryville; James A. Gray, Watson; Frank H. Rose, Albany; Pren J. Ross, Grant City, with the officers, Drs. Clifton M. Waugh, Tarkio; Charles D. Humbert, Barnard, and Samuel E. Simpson, Stanberry, ex-officio members.

The chair announced a legislative committee of Drs. Emmett B. Settle, Rock Port; Pren J. Ross, Grant City, and Samuel E. Simpson, Stanberry.

Dr. E. H. Skinner, Kansas City, discussed the recent medical preparedness questionnaires.

It was announced that Dr. S. L. Siegler of the Brooklyn Women's Hospital, would present a paper on his clinical experiences with the hormones and a sound movie, "Sex Hormone Therapy" through the courtesy of the Upjohn Company on November 4. The program committee announced that it was attempting to secure a member of the United States Army Medical Corps to discuss the relationship of physicians to present and future medico-military affairs.

Dr. Joseph H. Farrow, of the experimental department of Memorial Hospital, New York City, gave an informal clinical lecture on the mutual agnations of various hormones to pathologic breast conditions, particularly tumors, with his views on the current experimental work in this field and the results that have been obtained in this work.

The discourse was discussed by Drs. Emmett B. Settle, Rock Port, and Charles H. Flynn, Tarkio.

#### Meeting of November 4

The Society met in the dining room of the Linville Hotel, Maryville, November 4, Dr. Clifton M. Waugh, Tarkio, presiding.

Members present were Drs. Charles T. Bell, J. A. Bloomer, Leslie E. Dean, Loren E. Egley, Robert C. Person, William Wallis, Jr., Maryville; Joseph M. Boyles, Conception Junction; Benjamin F. Byland, Burlington Junction; Charles D. Humbert, Barnard; John M. Davis, Charles H. Flynn, Claude D. Haskell, Clifton M. Waugh, Tarkio; Emmett B. Settle, Rock Port; Henry C. Bauman, Fairfax; Samuel E. Simpson, Stanberry. Guests present were Drs. A. S. Bristow, Princeton, Councilor of the First District; Owen W. Craig and W. T. Stacy, St. Joseph; Earl Braniger, Jesse Miller and H. B. Stinson, Maryville, dentists; Mr. C. A. Leggett of the Upjohn Company.

It was announced that the guest speaker for the meeting of December 2 would be Dr. Andrew B. Jones, St. Louis.

Captain Winton T. Stacy, M.D., Medical Reserve Corps of the United States Army, Medical Corps of the Missouri National Guard, St. Joseph, spoke extemporaneously on "The Role of the Doctor in National Military Preparedness."

A sound movie, "Sex Hormone Therapy," prepared by Dr. S. L. Siegler of the Brooklyn Women's Hospital, Brooklyn, was presented by Mr. C. A. Leggett of the Upjohn Company.

Dr. A. S. Bristow, Princeton, Councilor of the First

District, discussed matters of importance to the medical profession.

### Meeting of December 2

The Society convened on December 2 in the first floor lecture room of the St. Francis Hospital, Maryville. Dr. Clifton M. Waugh, Tarkio, presiding.

Members present were Drs. Charles T. Bell, Leslie E. Dean, William Wallis, Jr., Maryville; Joseph M. Boyles, Conception Junction; Benjamin F. Byland, Burlington Junction; Charles D. Humbert, Barnard; Charles W. Kirk, Hopkins; Eugene Crowson, Pickering; Charles E. Benham, Charles H. Flynn, Claude D. Haskell and Clifton M. Waugh, Tarkio; Henry C. Bauman, Fairfax; Emmett B. Settle and Charles T. Settle, Rock Port; Samuel E. Simpson, Stanberry. Guests present were Dr. Andrew B. Jones, St. Louis, and Drs. Jesse Miller and Harry L. Stinson, Maryville, dentists.

It was announced that Dr. C. A. Owen, Associate Professor of Neurology in the University of Nebraska School of Medicine, would speak on some topic of interest to general practice on January 6.

The following officers were elected: President, Dr. Samuel E. Simpson, Stanberry; vice president, Dr. Pren J. Ross, Grant City; secretary-treasurer, Dr. Charles D. Humbert, Barnard; delegate (Nodaway County), Dr. B. F. Byland, Burlington Junction, alternate, Dr. Charles D. Humbert, Barnard; delegate (Atchison County), Dr. Charles H. Flynn, Tarkio, alternate, Dr. Henry C. Bauman, Fairfax; delegate (Gentry County), Dr. Samuel E. Simpson, Stanberry, alternate, Dr. Frank H. Rose, Albany; delegate (Worth County), Dr. Pren J. Ross, Grant City, alternate, Dr. John Andrews, Grant City.

Dr. Andrew B. Jones, St. Louis, gave a didactic lecture on "Acute Disseminated Encephalo-Myelitis."

The lecture was discussed by Drs. B. F. Byland, Burlington Junction; Charles H. Flynn, and Clifton M. Waugh, Tarkio, and William Wallis, Jr., Maryville.

Upon motion of Dr. E. B. Settle, Rock Port, a vote of thanks was extended to Dr. Clifton M. Waugh, Tarkio, the retiring president, for his labors on the Society's behalf during 1940.

CHARLES D. HUMBERT, M.D., Secretary.

### SECOND COUNCILOR DISTRICT

H. B. GOODRICH, HANNIBAL, COUNCILOR

#### Chariton County Medical Society

The Chariton County Medical Society met in Salisbury, November 27. Nineteen members and guests were present.

Dr. Dudley A. Robnett, Columbia, discussed "Recent Advances in Surgery."

Dr. M. Pinson Neal, Columbia, spoke on "Tumors and Diseases of the Neck."

Officers for 1941 were elected as follow: President, Dr. G. W. Hawkins, Salisbury; vice president, Dr. W. T. Hyatt, Brunswick; secretary-treasurer, Dr. F. L. Harms, Salisbury; delegate, Dr. G. W. Hawkins, Salisbury; alternate, Dr. J. W. Hardy, Sumner.

G. W. HAWKINS, M.D., Secretary.

#### Lewis-Clark-Scotland County Medical Society

The Lewis-Clark-Scotland County Medical Society met in the office of Dr. J. R. Bridges, Kahoka, November 28.

The following were present: Drs. J. R. Bridges, Kahoka; P. W. Jennings, Canton; E. E. Parrish and A. E. Platter, Memphis; W. L. Ellery, La Grange; W. S. Petty, Sioux City, Iowa; E. V. Davis and J. J. Wimp, Kirksville.

Dr. E. V. Davis, Kirksville, gave a talk on public health work and the program of the state regarding pneumonia and gonorrhea.

Dr. J. J. Wimp, Kirksville, spoke on "Treatment of Common Discharges."

The following officers were elected: President, Dr. J. R. Bridges, Kahoka; secretary, Dr. P. W. Jennings, Canton.

P. W. JENNINGS, M.D., Secretary.

### FIFTH COUNCILOR DISTRICT

W. A. BLOOM, FAYETTE, COUNCILOR

#### Boone County Medical Society

The Boone County Medical Society met at the Boone County Hospital, Columbia, December 3, at 7:45 p. m., Dr. F. E. Dexheimer, Columbia, presiding.

The applications for membership of Drs. Henry H. Sweets, Jr., John W. Dix, William O. Denzer and G. W. Kittelberger were referred to the board of censors.

Dr. J. H. Delaney was accepted to membership by transfer from the Wayne County Medical Society, Detroit, Michigan.

The following officers were elected: President, Dr. William B. Brown, Columbia; vice president, Dr. M. E. Cooper, Columbia; secretary and treasurer, Dr. O. F. Bradford, Columbia; member board of censors, Dr. Edgar D. Baskett, Columbia; delegate, Dr. A. R. McComas, Sturgeon; alternate, Dr. Dudley S. Conley, Columbia; member of auxiliary committee on public policy, Dr. Karl D. Dietrich, Columbia.

Dr. D. A. Robnett, Columbia, called attention to the outstanding honor that had been given to Dr. M. Pinson Neal, Columbia, in his recent election as president-elect of the Southern Medical Association. He felt that the Society was signally honored by having as a member a man who had thus attained such national recognition and suggested that the Society make due note of the event and record it in the minutes. The Society unanimously acclaimed the suggestion.

Dr. Karl D. Dietrich, Columbia, called attention to Dr. Dudley S. Conley, Columbia, having been elected vice president of the American Association of Medical Colleges. This is the first time that this organization has recognized a two year medical school by the election of its Dean to an executive position. The Society likewise unanimously acclaimed this announcement.

Dr. Robert H. Simpson, Columbia, presented some observations he has made in connection with appendectomies relative to the apparent shortening of the lateral mesentery which supports the terminal ileum as being a possible cause of postoperative distension. He reported considerable reduction in the incidence of postoperative complications through the expediency of careful dissection through this contracted mesentery along a line parallel to the axis of the intestine. Discussion followed.

M. E. COOPER, M.D., Secretary.

#### Howard County Medical Society

The Howard County Medical Society met at the Lee Hospital, Fayette, November 29.

Dr. M. P. Leech, Fayette, was elected to membership. Plans were made for a joint meeting of the Cooper County Medical Society and the Howard County Medical Society in Fayette.

The following officers were elected: President, Dr. W. B. Kitchen, Glasgow; vice president, Dr. W. M. Dickerson, Armstrong; secretary and treasurer, Dr. Wm. J. Shaw, Fayette.

WM. J. SHAW, M.D., Secretary.

## EIGHTH COUNCILOR DISTRICT

H. L. KERR, CRANE, COUNCILOR

The Eighth Councilor District held its fourth annual meeting on November 22 at the Colonial Hotel, Springfield, with the Greene County Medical Society as host. Dr. H. L. Kerr, Crane, Councilor, presided.

Scientific papers were presented in the afternoon and in the evening following a banquet at 6:30 p. m. Presenting scientific papers were Drs. F. T. H'Doubler, Robert Vinyard and Wallis Smith, Springfield; Winfred L. Post, B. E. DeTar, Mervin H. Black and W. M. Kinney, Joplin, and Jesse E. Douglass, Webb City.

Dr. J. F. Roberts, Bolivar, aged 90 years, spoke on "How It Feels to Practice Medicine for 68 Years." His paper follows:

"It is a great pleasure to me to be able to meet again with you at this time. At the request of our Councilor, Dr. Kerr, I promised to speak on 'How It Feels to Practice Medicine for Sixty-Eight Years.' I felt the subject was so broad and complex that I could touch it only superficially. In order to emphasize the later years of my practice and the difference between each epoch, I have taken the liberty to speak of my early years and the conditions then as well as now.

"Since the time I began the practice of medicine there has been a great evolution both as to the cause and treatment of disease due to scientific investigation, experimentation and accidental discoveries. Since the time of Pasteur, Koch, Lister and other scientists, the real causes of many diseases and their treatment and prevention have been founded not on theory and false tradition but on scientific facts. Great progress in surgery and its successful methods are due greatly to antiseptic surgery. Formerly much surgery work was necessarily done by the general practitioner. There were few hospitals except in the larger cities and even those who did surgery also were in general practice as well. In later years highly scientific specialists have taken over many of the diseases formerly treated by the general practitioner.

"To the younger generations, those who have not lived over it, fifty or sixty years seems a long time, but to those like myself who have been so actively engaged in our work the lapse of time is not realized so much. It is a saying that younger people live in the future and the old people in the past. This in the main is true to nature. We see among the young those who build their air castles for the future. The old, on the contrary, look back upon their past life, their experiences and their associations with a pleasant retrospect.

"Who can have a fuller life than the general practitioner who has spent a long life in the practice of medicine? In later years, after the doctor has spent so many years in practice and has been separated from his old patients for years, it is a great pleasure for them to meet and greet each other. Old friends become new friends. There is nothing in the life of the doctor and his patient that creates a closer or more enduring friendship than association in the sick room of a mother, child or father. However much satisfaction and pleasure children bring their parents, they bring also care and responsibility and often great anxiety. Especially in case of sickness, the mother and father will exert every ounce of strength and endurance to save the child and they look with hope and confidence to accomplishment of this to the doctor's skill. The clouds of today may be dispelled by the winds of tomorrow.

"The doctor's mission and work is symbolized by his devotion to his professional work. During my time of practice, I have known personally three doctors who succumbed by contracting disease from patients, one of yellow fever in the epidemic at Memphis, Tennessee, in 1875, and two who contracted influenza in 1917.

"I recently have been enabled to assist in securing certified copies of birth certificates as the attending

physician for three generations of the same family, the parent, child and grandchild.

"I hope the medical profession will succeed in the prevention of socialized medicine or national control of the practice of medicine in the United States and maintain its high ideals and ethics in the future as in the past. Were I a young man and had to choose a calling for my life's work, I again would select the same profession that I will be glad to relinquish soon. It is a consolation to realize that the time is approaching or is near when I will be relieved of the care and responsibility of the duties of my profession as a physician. To the younger members of the profession, I extend my sincere wish to each of you that you may be permitted to attain a long, useful and prosperous life."

## TENTH COUNCILOR DISTRICT

E. J. NIENSTEDT, SIKESTON, COUNCILOR

## Cape Girardeau County Medical Society

The Cape Girardeau County Medical Society met at the Colonial Tavern, Cape Girardeau, December 9. The meeting was called to order by Dr. C. T. Herbert, Cape Girardeau, president.

Members and guests present were Drs. Edward Crites, Sedgewickville; D. I. L. Seabaugh, A. M. Estes, E. R. Schoen, Jackson; W. H. Wescoat, H. V. Ashley, O. L. Seabaugh, J. H. Cochran, M. H. Shelby, G. A. Reynolds, R. A. Ritter, P. B. Nussbaum, Glenn J. Tygett, W. F. Oehler, F. W. Hall, C. A. W. Zimmermann, W. T. Ruff and V. H. Karpass, Cape Girardeau.

The secretary discussed the National Physician's Committee for the Extension of Medical Service and stressed its great importance.

Dr. T. E. Ruff, Cape Girardeau, was accepted as a member by transfer from the Franklin County Medical Society.

Dr. V. H. Karpass, Cape Girardeau, was elected a member.

The program committee announced that Mrs. Myrtle Pangburn of the State Social Security Commission had requested an audience with the Society and it was decided that an invitation should be extended.

Dr. D. I. L. Seabaugh, Jackson, announced that physicians should send in bills for service to the Farm Security Administration.

The following officers were elected: President, Dr. C. A. W. Zimmermann, Cape Girardeau; vice president, Dr. O. L. Seabaugh, Cape Girardeau; secretary, Dr. M. H. Shelby, Cape Girardeau; treasurer, Dr. C. T. Herbert, Cape Girardeau; delegate, Dr. J. H. Cochran, Cape Girardeau; member board of censors, Dr. Edward Crites, Sedgewickville.

C. A. W. ZIMMERMANN, M.D., Secretary.

St. Francois-Iron-Madison-Washington-Reynolds  
County Medical Society

The St. Francois-Iron-Madison-Washington-Reynolds County Medical Society met at the St. Francois County Courthouse, Farmington, November 29 at 7:30 p. m. Dr. Paul L. Jones, Flat River, presided.

Members present were Drs. C. H. Appleberry and Paul L. Jones, Flat River; Reuben Appleberry, C. C. Ault, F. R. Crouch, G. Tivis Graves, N. W. Hawkins and Paul J. Schrader, Farmington; H. W. Barron, Fredricktown; R. E. Harland, Ironton; Marvin Haw, Jr., H. M. Roebber, David E. Smith and Van W. Taylor, Bonne Terre; J. W. Hunt, Leadwood; J. L. Thurman, Potosi, and J. P. Yeargain, Irondale.

Dr. Otto J. Wilhelmi, St. Louis, gave an interesting and instructive talk with motion pictures on "Transurethral Prostatectomy."

Dr. Robert Mueller, St. Louis, gave an informative talk on "Medical Preparedness" which was followed by a lengthy discussion.

G. TIVIS GRAVES, M.D., Secretary.

## WOMAN'S AUXILIARY

### WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

19th Annual Meeting, Cleveland

President, Mrs. V. E. Holcombe, Charleston, W. Va.  
President-Elect, Mrs. R. E. Mosiman, Seattle, Wash.

### WOMAN'S AUXILIARY TO THE MISSOURI STATE MEDICAL ASSOCIATION

President, Mrs. Stanley P. Howard, Jefferson City.  
President-Elect, Mrs. J. J. Drace, Chillicothe.  
Adviser, Dr. Herbert L. Mantz, Kansas City.

A health essay contest is being sponsored again this year by the Woman's Auxiliary with Mrs. J. J. Drace, Cape Girardeau, chairman. The contest has the approval of the State Department of Education, the State Board of Health and the Missouri State Medical Association. The rules have been sent to all schools of the state. The subject is "Conservation of Eyesight." Any high school student in the state may participate. The essays are not to exceed 1,200 words and are to be in by February 1, 1941. Each school can submit four essays. The essays will be judged on originality, composition and evidence of study. For information address Mrs. J. J. Drace, Clar-An Apartments, Cape Girardeau.

Mrs. Stanley P. Howard, Jefferson City, state president, and Mrs. C. H. Werner, St. Joseph, national chairman of organization, attended the meeting of the National Board in November in Chicago. Many important things were discussed and both women have written about the meeting in the January issue of the *Quarterly Bulletin*. Mrs. Werner states that the National Organization Committee reported twenty-six new auxiliaries; the State of Washington reported new members in all auxiliaries; meetings have been arranged in three cities in Montana and one in Wyoming; there is one auxiliary in Montana, at Missoula. The National Board is attempting to increase the number of subscriptions to the *Bulletin*, successor to the *News Letter*. The cost is \$1.00 annually. Mrs. V. E. Holcombe, Charleston, West Virginia, national president, has written a booklet to inform members of the *Bulletin*.

## BOOKS FOR LEISURE MOMENTS

### A BETTER BIOGRAPHY

It is almost incredible that less than four decades could include so much fascinating adventure in the life of a despoiled Russian aristocrat as is described in "In Search of Complications" by Eugene de Lavitsch, M.D. (Simon and Schuster, New York). A volunteer in the White Army at seventeen, heartbreak and disillusionment came quickly into the life of this international wanderer. He was successively a human derelict receiving free treatment in a tuberculosis sanitarium, a charming raconteur so attractive to the fashionable ladies of a large midwestern city that they paid his way through medical school and financed his postgraduate study in Europe, hunter of specimens in the disease infested African interior, a practitioner in Paris where he found prestige and recognition in the international colony, contributor of a stream of research and papers. Finally with the approach of the juggernaut he returned to America where he again established a practice and

found time to write vividly and entrancingly a twentieth century version of Horatio Alger.

His penetrating comments upon the whims and foibles of the races with whom he lived, his sometimes caustic wit, his thrilling accounts of flirtations with death, famine, wealth and languorous women might have the makings of a best seller. However, there are only two thoughts that the reader may carry away with him, i. e., that life can be rich in adventure and that America is still the land of opportunity, the land in which individual accomplishment is possible and will earn its own recognition. Even so, the factual thread of the narrative is amazing and will engulf the reader in the swift, absorbing march of events. B. Y. G.

### PARENT TO PARENT

During the process of rearing four children Helen Ellwanger Hanford found time to contribute numerous articles to magazines. She has combined some of the articles and all her experience in "Parents Can Learn" (Henry Holt & Co., New York). In seventeen chapters and 250 pages she traces the growth of the child from conception to marriage. She contributes, from the point of view of her own trials, to make the task of parenthood easier, pleasanter, safer. Common sense rather than psychologic doctrine is the prevailing motif of the author.

Her literary style is breezy, occasionally almost rampant. In the desire to be vivid she loses to a degree the effectiveness of a direct presentation. She insists that the child should develop the potentialities of his individual personality in smooth rapport with the particular environment in which he finds himself. She urges that the child do for himself at the earliest possible age in the best possible manner. That, perhaps, is the major significance of the book. B. Y. G.

## BOOK REVIEWS

**DAILY LOG FOR PHYSICIANS.** Published yearly. Compiled by John B. Colwell. Champaign, Illinois: The Colwell Publishing Company. 1940. Price \$6.00.

The Daily Log furnishes a convenient, practical method for physicians to keep financial records with the least amount of effort. It consists of daily pages of thirty-six lines each to accommodate name of patient, hour, service rendered, charge, cash or credit on account, all on one line.

In addition to the daily record it contains sheets especially printed for a monthly summary, expense sheets, personal accounts, special records and an annual summary.

The Daily Log is highly recommended for a brief, simple accurate financial record for the physician's desk.

**DISEASES OF THE EAR, NOSE AND THROAT.** By Francis L. Lederer, M.D., B.Sc., F.A.C.S., Professor and Head of the Department of Laryngology, University of Illinois College of Medicine, Chicago; Chief of the Otolaryngological Service, Research and Educational Hospital. Second revised edition. Illustrated with 765 half-tones and 16 full page color plates. Philadelphia: F. A. Davis Company. 1939.

"Principles and Practice of Otorhinolaryngology," the subtitle of this book, defines to some extent the purpose of the book—to meet the needs of students and general practitioners and also to serve teachers and specialists. That the book has served its purpose satisfactorily is attested by a second edition within a year.

The author has done well in treating exhaustively

essential material and eliminating nonessential details. Many illustrations cover anatomy, diagnosis and therapeutic problems. Additions and improvements have been made in the illustrations in the second edition.

The material is logically organized, the book being divided into sections on "Diseases of the Ear," "Diseases of the Nose and Sinuses," "Diseases of the Pharynx," "Diseases of the Larynx, Trachea, Bronchi, and Esophagus" and "Correlated Considerations." Suitable chapters in each division make continuous study or reference to specific material equally easy.

The book well fulfills its purpose and is of value to student, teacher and practitioner. S. S. B.

**MANAGEMENT OF THE CARDIAC PATIENT.** By William G. Leaman, Jr., M.D., F.A.C.P., Assistant Professor of Medicine in Charge of the Department of Cardiology, Womans Medical College of Pennsylvania, Philadelphia, etc. 255 Original Illustrations, two of which are in color. Philadelphia, London, Montreal: J. B. Lippincott Company. 1940. Price \$6.50.

This is an excellent "review of the heart" and its 705 pages are filled with facts valuable in the management of cardiac patients. The general practitioner will find a review in physical diagnosis of the heart and an evaluation of the newest laboratory methods.

A feature of Dr. Leaman's presentation is use of the case method. By this means he shows how essential diagnostic aids, laboratory procedures and therapeutic measures are actually employed in various every day heart cases. These case reports are well chosen, brief, complete and just like the patients one has seen or is seeing. How laboratory aids check and govern therapy is demonstrated repeatedly. Dr. Leaman gives generously of his vast experience with patients who have heart disease. These case histories in many cases include neuropsychy reports and photographs.

Approximately one hundred pages are devoted to electrocardiography and gives one of the best simplified explanations a beginner could read on this subject.

The nomenclature of the American Heart Association is given together with functional and therapeutic classifications. The case reports all include a complete cardiac diagnosis along these lines.

Several chapters are devoted to such new and practical problems as allergy and the heart, functional heart disease, the heart in pregnancy, cardiac problems in surgical practice, cardiac emergencies, physiotherapy in the treatment of heart disease, prescription of exercise and diet in heart disease. F. S. M.

**THE FOOT AND ANKLE. Their Injuries, Diseases, Deformities and Disabilities.** By Philip Lewin, M.D., F.A.C.S., Associate Professor of Bone and Joint Surgery, Northwestern University Medical School; Professor of Orthopaedic Surgery, Post-Graduate Medical School of Cook County Hospital, etc. With 303 illustrations. Philadelphia: Lea & Febiger. 1940. Price \$9.00.

Dr. Lewin presents the subject of all foot ailments in a complete and concise manner. The important works of the pioneers in this field, supplemented by his own knowledge from many years of experience, are recorded in this book and make it a worthy contribution to the literature on this subject.

The first part of this six hundred page book is concerned with the basic principles of anatomy, biomechanics, diagnostic methods and methods of treatment. The following pages deal with congenital and developmental lesions. The latter portion includes traumatic, inflammatory, neurological and more briefly the neoplastic disorders. The surgical treatment of foot disorders is accompanied by excellent detailed illustrations. The medicinal treatment of dietary deficiency, metabolic diseases together with the problems of tuber-

culosis, syphilis and arthritis is described. Most topics are dealt with briefly because of the extensive scope of this work, but an excellent seven page bibliography can refer one to original articles.

Dr. Lewin has intended to remind one of all the possible disorders which may affect the feet. For example, there is quoted from the author's statement on gout, "One must have a suspicion because the searcher is more likely to find something of which he is thinking," and this applies to other medical problems as well.

The author is to be congratulated on handling such a difficult and large subject so successfully and this book would be a valuable addition to the library of any general practitioner or orthopedist. S. M. L.

**CLINICAL TOXICOLOGY.** By Clinton H. Thienes, M.D., Ph.D., Professor of Pharmacology and Head of the Department of Pharmacology, School of Medicine, University of Southern California, Los Angeles, etc. Illustrated. Philadelphia: Lea & Febiger. 1940. Price \$3.50.

"Clinical Toxicology" by Clinton H. Thienes is a textbook that can be used by the general practitioner or in the classroom. The poisons are grouped according to their major toxic action. Each material is discussed as to toxic dose, source, chemistry, absorption, etiology, symptoms and actions, duration of toxic action, pathology, diagnosis, treatment and cause of death. Each subject is discussed in a brief but informative manner which makes it a handy volume for ready reference. If one desires an exhaustive study, this book will not suffice. The book is well written and is recommended for what it is intended to be: a classroom text and guide for the general practitioner. E. C. F.

**VITAMIN THERAPY IN GENERAL PRACTICE.** By Edgar S. Gordon, M.D., M.A., Associate in Medicine and Instructor in Physiological Chemistry, University of Wisconsin, and Elmer L. Sevringhaus, M.D., F.A.C.P., Professor of Medicine, University of Wisconsin, etc. Chicago: The Year Book Publishers, Inc. 1940. Price \$2.75.

One of the fastest developing fields of medicine today is the vitamins. The bulk of what is known at present about this subject has been brought forward in the last five years. If this pace continues even for the next decade a very comprehensive specialty will arise. The text points out that while ten vitamins are known now it is likely that this number will be doubled in the near future.

The authors point out that the increased availability of synthetic vitamins means better results through more accurate dosage. Subclinical vitamin deficiencies are more apt to be multiple than single. Overdosage is not thought to be harmful but no better results are obtained since the excess is excreted rapidly. When the diagnosis is in error there will be no results because of the specificity of vitamins.

The different vitamins are discussed briefly and food tables and clinical applications together with recommended dosages are stated concisely. A short historical survey opens the chapter on each of the vitamins. All components of the vitamin B complex are discussed thoroughly.

The closing chapters consider minerals, protein, fuel food, carbohydrate, fat, weight control, dental problem in nutrition and the economic side of clinical nutrition.

An appendix considers commercial preparations and lists the size and form of preparation of every vitamin. Laboratory methods of assay for deficiency diseases giving references where detailed technic can be consulted. Tables of vitamin values of various foods and references for further reading. This book provides the most rapid source of information about vitamins which is available to practitioners. F. S. M.

# THE JOURNAL

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### THE TREATMENT OF SOME OF THE CONTAGIOUS DISEASES

J. H. MUSSER, M.D.

NEW ORLEANS, LA.

My purposes in presenting this subject are two-fold: In the first place I have come in almost daily contact with a large and active contagious disease service where I have had the opportunity of observing various forms of treatment in a large number of patients. In the second place, the average physician sees these contagious diseases from time to time but relatively few in number. Therefore, it might be of some interest to the active practitioner to hear of some of the methods of treatment of these childhood diseases in a large group of cases, for the most part those which have been definitely successful or failures. It may be that I will be able to present some major or minor therapeutic procedure which may help. I am going to be rather dogmatic in my statements because I have a big field to cover in a relatively short time.

#### DIPHTHERIA

It is the general consensus that diphtheria is diminishing rather rapidly in frequency and this opinion is well substantiated by statistics. In the annual report of this year concerning diphtheria morbidity, which is published every year by the *Journal of the American Medical Association*, it was noted that in such cities as Providence, New Bedford, Syracuse, Duluth, Grand Rapids and Rochester, the disease did not occur in the preceding year. The statistics and figures of Bundeson, Fishbein and White are particularly important. These observers state that in 1917 there were something over 10,000 cases of diphtheria in the City of Chicago and a total number of deaths of 1,229, giving a death rate per 100,000 population of 47.8. Contrast these figures with those of two decades later; in 1937 there were 655 cases with 84 deaths and a mortality rate of 2.3.

Presented at the 83rd Annual Session of the Missouri State Medical Association, Joplin, April 29, 30, May 1, 1940.

From the Department of Medicine, Tulane University of Louisiana School of Medicine, New Orleans, and visiting staff, Charity Hospital, New Orleans.

In New Orleans in 1937 there were 150 children admitted to the Charity Hospital with a diagnosis of diphtheria. In 1938 this number fell to 127 and in 1939 to 96. I am mentioning these particular figures because they illustrate splendidly what can be accomplished in the prevention of diphtheria. Five years ago a campaign to immunize all children of school age was started in New Orleans. As a result of these efforts approximately 40,000 children who were Schick positive received toxin antitoxin or toxoid. The figures of Charity Hospital illustrate the results of this campaign. It is unfortunate that it was not possible to immunize all children of pre-school age but it so happens that this particular preventive measure would have been impossible at that time. It is only through education of the general population and through the cooperation of the family practitioner that the small children in the city generally will be given toxoid. Immunization, of course, is largely a problem of the family physician. It is decidedly up to him to see that the child is immunized before it has reached the age of 2. Where this has been and is being carried out generally the diphtheria rate has fallen to the astounding figure of zero in those cities I have mentioned. It is an excellent thing, incidentally, to combine diphtheria toxoid with alum precipitated tetanus toxoid. Few children develop tetanus but if they are given toxoid, which is innocuous and harmless, following an injury they will not have to be given tetanus antitoxin which inherently has all the evils that necessarily arise at times with the giving of any horse antiserum.

It is my custom for the ordinary pharyngeal type of diphtheria to give the child diphtheria antitoxin in amounts of approximately 10,000 units. This is almost invariably the rule. On the other hand, the children with laryngeal involvement are the children who die. While the antitoxin concentration in the blood may be high enough to combat the diphtheria toxin in richly vascular structures such as the tonsils, I do not think that it has the same effect in a relatively avascular section of the anatomy. Furthermore, for some peculiar reason the exudate of laryngeal diphtheria will extend down the trachea and even into the bronchi with a rapidity

which is astounding. These children with evidence of laryngeal obstruction are given from 80 to 100,000 units initially, one half intramuscularly and the other half intraperitoneally. On the whole, results have been fairly satisfactory.

In the care of the cardiac complications of diphtheria without doubt rest is the most important prophylactic and preventive measure. To see a child, who shows no clinical evidence of disease a few days after diphtheria has subsided, jump out of bed or try to climb back in bed or make some other vigorous physical exertion then keel over in acute cardiovasomotor collapse and possibly die, is an experience which is most distressing and never to be forgotten. This has happened to more than several children in Charity Hospital. I cannot stress too strongly that a child, following an attack of diphtheria, should be kept quiet for a minimum of three weeks and that all active physical efforts should be interdicted for at least two weeks more. In the treatment of failure glucose solution is used, depending on it rather than on digitalis which incidentally may be contraindicated in certain types of postdiphtheritic heart failure.

#### SCARLET FEVER

In the life cycle of the contagious diseases there are long periods of ups and downs in the severity of the infection. Sometimes these waves of relative severity or innocuousness last for many years. Scarletina is and has been in the last few years a comparatively mild disease. It was not until last spring that I saw three cases of septic scarlatina over a period of approximately eight years.

In the management of the child with scarlet fever, antiserum is an extremely effective remedy. It has been my observation that, with the present day scarlatina following the administration of serum, the child would be practically well in from twenty-four to forty-eight hours. The throat would clear up in a few days, the rash would disappear in twelve hours and the child would be well. In the three septic cases observed last spring the results were not so phenomenal. Many doctors have discontinued using serum because of the severe allergic reactions which occur about a week later. Urticaria is so annoying and so severe that the cure is worse than the disease. Comparatively recently the protein of the serum has been materially reduced so that it is much more highly concentrated and the serum reactions are much less common.

As with all other streptococcal diseases, sulfanilamide is being employed extensively in the treatment of scarlatina. Results in Charity Hospital have been brilliant, and results reported by others have been excellent. Thus Thenebe and his co-workers treated 300 children with scarlet fever. Complications occurred in one out of every ten of the cases but three fourths of these complications were allergic or toxic. Reduction in the septic sequelae was from 22.2 to 2.18 per cent. I agree with these authors that if sulfanilamide does not work satisfactorily, then scarlet fever anti-

toxin should be administered. I insist that sulfanilamide should be continued for at least a week in order to prevent septic complications. Other papers have appeared which are not as enthusiastic about sulfanilamide but experience in the Charity Hospital on the Louisiana State University service, Tulane service and the Independent service certainly shows that the drug is extremely efficacious.

#### WHOOPIING COUGH

In the treatment of children with whooping cough, vaccine, convalescent serum, roentgen ray therapy and nearly everything else that has been proposed in the management of these patients has been tried. None of the measures are particularly effective. The two things that I have learned are: First, the child should be fed always after paroxysms of coughing because the cough reflex is less likely to occur then and hence the vomiting of the nourishment will not occur. In the second place, in controlling the paroxysms olive oil and ether injected into the rectum of the child, 10 to 20 cc. of equal parts of olive oil and ether, is most effective. This is an unwelcome form of medication; the emulsion burns and irritates the rectal mucosa and the child tries to expel it immediately. However, if the cheeks of the buttocks are held together for a minute or two the ether is rapidly absorbed.

Convalescent serum is a good thing to give a child if whooping cough breaks out in the family. Sometimes it confers a passive immunity which protects. Under any circumstance it will modify the severity of the illness favorably if it does not actually prevent it.

#### CHICKENPOX

This is an extremely contagious disease. It is worrisome only because once in a while secondary infections of the face leave pock marks in girl babies which may mar their complexion for the rest of life. To obviate scratching and infecting secondarily the facial lesions a tongue depressor splint at the bend of the elbow prevents the child from bending the elbow, or a pasteboard cuff placed about the elbow joint bandaged lightly in position. It will not constrict and at the same time the child cannot flex the arm.

#### MEASLES

I think measles usually is looked upon as a relatively innocuous disease, one that every child is going to have sooner or later and one which is of little moment. Despite this general conception, in epidemics the disease sometimes strikes with a severity which is astounding. Witness the secondary to measles streptococcal pneumonias that occurred during the war and caused the death of thousands of soldiers. In the one severe epidemic I have observed in New Orleans, the death rate in small babies was appalling, usually from bronchopneumonia, occasionally from otitis media and its complications and rarely from encephalitis. The only thought that I have about the treatment of measles and its complications is that in the event

of an epidemic it would be advisable and wise to start the administration of sulfanilamide with the thought that it would prevent the streptococcal complications which cause death. Whether it would have any effect on the postmeasles encephalitis, which I look upon as a virus disturbance, is questionable.

Convalescent serum or even whole blood modifies the course of measles and in a baby or a small child who is sickly it would be well to give from 10 to 20 cc. of convalescent serum or from 50 to 100 cc. of whole blood, taken from a person who has had measles, injecting it into the buttocks.

Recently there has been placed on the market a measles antibody preparation called immune globulin which is obtained from placental blood and tissue. I have not had the opportunity of using this but the reports are most enthusiastic. In Massachusetts, McKhann, Eley and others conclude that commercial globulin administered in doses of 2 cc. was of real help in the prevention and modification of the course of measles.

#### ACUTE LYMPHOCYTIC CHORIOMENINGITIS

I mention this relatively rare disease because I believe it is more common than generally is considered. Recently Tripoli and Fader reported twelve cases occurring in the contagious disease services at Charity Hospital. The diagnosis is made only by lumbar puncture and because in many instances undoubtedly the symptoms are not sufficiently severe to warrant this procedure, many cases are probably escaping diagnosis. If a child has headache, nausea and vomiting, possibly some psychic disturbance and stiffness of the neck muscles, lumbar puncture is performed and there is found to be an increase of the cells to from 250 up to 1,000. The child, probably thought to have a tuberculous meningitis, then proceeds to get well promptly. The only treatment is lumbar puncture repeated if the headache does not improve promptly.

#### PNEUMOCOCCIC MENINGITIS

I am going into some detail of the treatment of this disease because the results at Charity Hospital with intensive therapy have been so excellent I think they are worth recording. An almost invariably fatal disorder, there have been three deaths only in the last nine cases. Specifically I will give the treatment of a patient who recovered. At 6:00 p. m. 2 grams of sulfapyridine were given intravenously; four hours later the spinal fluid having been typed, the patient was given 100,000 units of antipneumococcic serum type VII; eight hours later 40,000 units and eight hours later 60,000 units of antipneumococcic serum. On the next day she was given 40,000 units of this serum and 4 grams of sodium sulfapyridine. At the end of that day the temperature was normal. The next day she was given 2 grams of sodium sulfapyridine and 40,000 units of antipneumococcic serum. Thereafter active intravenous therapy was discontinued and sulfa-

pyridine was given by mouth for another week, cutting down gradually on the dosage.

#### MENINGOCOCCIC MENINGITIS

In the treatment of this condition giving serum intrathecally has been discontinued. The antitoxin is given intravenously, from 20,000 to 30,000 units diluted to 200 cc. with normal saline, given slowly. The same size dose is given intramuscularly at the same time. The dose is repeated in twenty-four hours. Generally it is not necessary to give more than 100,000 units. In the meantime the spinal canal is drained the first two or three days twice a day; if the patient improves, thereafter only once every twenty-four hours which is continued a variable time, usually not more than four or five days. At the same time sulfanilamide is started, the sodium salt being given intramuscularly if the patient is delirious and cannot swallow. The first dose is from 4 to 6 grams, depending on the size of the child. This is repeated four hours later and then 1 gram is given every four hours and continued until the improvement is definite. Thereafter sulfanilamide is diminished gradually but still continued for four days after the temperature has returned to normal.

This method of handling patients has been encouraging. Everything under the sun to cure meningococcic meningitis was tried with poor results. In the last four months results with this form of treatment have been excellent.

#### SUMMARY

I have attempted briefly to offer a few suggestions concerning the treatment of some of the acute contagious diseases. Rather facetiously I may observe that in the near future treatment of all of the acute contagious and infectious diseases may be boiled down to the administration of sulfanilamide or some of its salts.

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The American College of Surgeons and the American Medical Association are joining forces in obtaining the information on which is based the recognition of hospitals and also are coordinating their hospital inspections so as to avoid duplication of effort, *The Journal of the Association* reports in its December 14 issue.

"Each year the Council on Medical Education and Hospitals of the American Medical Association takes a census of registered hospitals, number more than 6,000," *The Journal* says. "The American College of Surgeons also has obtained statistical reports from hospitals already meeting the minimum standards of the College and those under consideration for approval. The combination of these reports into one simplified form will be welcome to the hospitals and especially to their administrative officers. Thus, with a minimum of trouble and expense, both the College and the Council secure such information as is necessary for the continuance of their recognition. Also the compiled returns serve as a basis for the Hospital Number of *The Journal of the American Medical Association*, which places essential information in the hands of all hospitals, physicians and others concerned. This should render unnecessary many of the questionnaires now sent to hospitals."

## OBSTRUCTION OF THE LACRIMAL PASSAGES IN THE NEWBORN INFANT

JOHN F. HARDESTY, M.D.

ST. LOUIS

Surprisingly little is found in the literature on obstruction of the lacrimal passages in the newborn, yet it occurs frequently enough to make it a problem of major importance in ophthalmological practice.

Stephenson<sup>1</sup> states that this condition was found in 1.75 per cent of 1,538 newborn infants.

This obstruction is usually of the nasolacrimal duct but it is not uncommon to find obstruction higher up. In some cases of higher obstructions it would appear that the obstruction is due to stricture secondary to infection but in some the obstruction is congenital.

I have records of two children in one family in which there was complete absence of one or more of the canaliculi. Occasionally one finds a simple occlusion of the punctum by a thin membrane which, when opened, completely relieves the condition. It generally is claimed that formation of tears does not begin until the fourth to eighth week of postnatal life; but this apparently does not hold true in all cases as I have been called to see cases in the hospital during the first two weeks of the baby's life because of excessive lacrimation.

Jackson<sup>2</sup> says most of this obstruction is due to delayed development of the tear passages and commonly can be expected to terminate in spontaneous, complete and permanent cure.

Jackson, further, quotes Rochon-Duvigneaud who found in thirty newborn or stillborn children three cases with the nasal orifice closed, and de Vlacovich, who, in nineteen autopsies on newborn children found four cases in which the orifice connecting the lacrimal drainage canal with the nose had not been opened yet.

Wm. Zentmayer<sup>3</sup> thinks most of these cases in newborn infants arise from imperforation of the membrane between the nasal cavity and nasal duct.

Some of these cases can be explained on the basis of accumulated mucus in the nose but, in considering their clinical course and the embryological development of the lacrimal passage, it would appear that incomplete development offers a more satisfactory explanation in most instances.

Textbooks state that the nasolacrimal duct arises in the 12 mm. embryo as a ridgelike thickening of the epithelial lining of the nasolacrimal groove which extends from the inner angle of the orbital fossa to the primitive olfactory fossa. This epithelial thickening becomes cut off from the surrounding epithelium and, as a solid cord, sinks into the underlying mesoderm. At about the 16 mm. stage the connection of this ectoderm with the nasal

cavity is broken, probably due to rapid growth of the mesoderm, but later this connection becomes reestablished.

At about the 18 mm. stage the upper lid is partially formed and meets the lower to form the outer canthus. Soon after this, by a further infolding and elongation of the ectoderm above, the inner canthus is formed. The infolding of the ectoderm is necessarily continuous with the original infolding of ectoderm.

These ectodermic tracts of cells are broken but at this time form the tracts which are later to become the lacrimal passages. The lids elongate to cover the eye and meet to fuse or adhere at the 37 mm. stage.

Mann says that at about the 50 mm. stage the tracts of ectodermic cells begin to soften and soon after this true canalization begins. This apparently begins above and extends downward. Completion of this canalization normally is complete shortly before birth, but in some cases it is delayed. It is this occasional delay which appears to account for most cases of obstruction in the newborn infant.

In going over my office records, I find that I have had at least sixty of these cases of obstruction in the last five years, an average of one per month, and without exception all were infected. If left to themselves practically all of these cases sooner or later become infected and then the problem of management is complicated by such conditions as the formation of strictures and erosion of bone.

In many of these cases of obstruction, particularly when seen early before infection has occurred, daily gentle but firm pressure over the lacrimal sac is often effective in establishing drainage into the nose. However, after infection has taken place, I have never found one in which drainage was established into the nose without at least repeated irrigations of the lacrimal sac. It is necessary to dilate and even enlarge the lower punctum, bearing in mind Jackson's warning that any operative interference should be done carefully so as to leave the puncta and canaliculi in as near normal condition as possible. Some writers warn of the danger of dilating and slitting the puncta but I have never encountered any serious consequences. Where simple irrigation of the sac fails to establish drainage into the nose, I then feel it necessary to pass a probe carefully; but obviously this is never done until the sac is freed of pus by repeated irrigations. Some clinicians advocate waiting two or three years for spontaneous cures, but this does not appeal to me as good surgery.

Ewing<sup>4</sup> devised a small lacrimal syringe which is ideal for use in these children and which can do no harm. It consists of a gold needle attached to an ordinary medicine dropper by a cuff, or a platinum needle fused into the end of a medicine dropper.

It has been my practice first to dilate the lower punctum enough to allow the insertion of a small needle to which is attached the dropper syringe of

Ewing. In most cases in which thick pus is present, it is desirable to slit the punctum to allow the insertion of a large tipped syringe. Boracic acid or sodium biborate has been used daily as an irrigation solution. Some prefer to instill antiseptics after lavage but, having in mind a young lady who has a permanent discoloration of the entire lower lid due to infiltration with a silver solution, I doubt the advisability of this. At any rate, I have put my faith in simple cleanliness by lavage and have had no cause to regret it.

In 34 per cent of my cases drainage into the nose occurred spontaneously during lavage of the sac to free it of pus, while 66 per cent required probing to establish this drainage into the nose. Of this 66 per cent requiring probing, a third required only one probing to establish permanent drainage. Of those requiring more than one probing, I feel sure that in some repetition was made necessary by probing before the sac was entirely free of infection.

As to the time element, twenty-nine patients were discharged as cured within one week, fourteen more in less than two weeks and nine more within the first month. The remaining seven cases include two with total congenital absence of both lower puncta as well as obstruction lower down; the others were not followed through to completion.

In presenting this subject to the general practitioner, the obstetrician and the pediatrician, the importance of attention to these cases as early as possible should be stressed.

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#### MEANING OF THE TERMS "COLD BLOODED" AND "WARM BLOODED"

Explaining the meaning of the terms "cold blooded" and "warm blooded" in their relation to cold endurance, *Hygeia, The Health Magazine* says: "These are popular terms but they do not mean what they say. Warm blooded animals are those whose body temperature is maintained at the same level regardless of outside temperatures. A better name for them would be 'constant temperature animals.'"

"Cold blooded animals are those whose temperature varies with the environment. They are able to sustain life in cold weather by adapting themselves to the low temperature through a variation of body temperature to correspond with the outside temperature. In cold weather they will be sluggish and in some instances appear to be dead.

"Among human beings differences in ability to withstand cold are determined in part by the amount of fat immediately under the skin. Because they are better equipped in this respect, women withstand cold better than men. In general, fat individuals feel the cold less than lean persons. Another factor is the rate at which body chemistry proceeds. This is governed largely by the thyroid gland."

## SULFANILAMIDE IN OTOLARYNGOLOGY

W. BYRON BLACK, M.D.

KANSAS CITY, MO.

Sulfanilamide is a relatively new drug about which more has been written and results published in a shorter time than about any drug previously. Phenomenal results have been obtained in so many branches of medicine that physicians have used the drug enthusiastically. It is almost impossible to find a medical journal or review without the inclusion of some article on the drug. I want to report some two hundred cases, adults and children, from the municipal hospitals, all of whom were treated with sulfanilamide.

A short review of the history, chemical formulae, indications, contraindications, mechanism of the action of sulfanilamide, dosage, methods of using, methods of checking concentration and reactions will not be amiss at this time.

#### HISTORY

The original paper was presented by Domagk in February 1935, dealing with a new dye developed by Mietzsch and Flarar which in vivo was antagonistic to the streptococcus. Sulfanilamide was introduced in this country by Long and Bliss (1937) for the treatment of beta hemolytic streptococcus infections. Since then its use has been extended to the treatment of erysipelas, pyelitis, meningococcus meningitis, gas bacillus infection, type III pneumococcus pneumonia, brucellosis, gonococcus infection, influenza, trachoma, infection of the urinary tract and streptococcic conditions of the ear, nose and throat. It is being used experimentally in other infections.

Sulfanilamide is most effective in beta hemolytic streptococcus infections. To date many different types of streptococci have been identified. Rebecca Lancefield of the Rockefeller Hospital recently has devised a method whereby they may be identified within thirty minutes whereas it usually requires four or five days. It is significant that 70 per cent of all streptococci infections in humans are caused by the beta hemolytic streptococci and that they are present in 90 per cent of the cases.

#### CHEMICAL FORMULAE

The original compound which received the trade name of streptozon and later prontosil was chemically sulfonamide-diamino-azobenzene. This chloride although slightly soluble in water was modified in order to secure a more soluble form that could be used effectively for injection therapy and, finally, prontosil soluble was obtained. These compounds were found to have almost identical effects on streptococci infections. On first glance their chemical structures seem to be quite different but

Written as a thesis for the American Laryngological, Rhinological and Otolological Society.

it will be noted that the sulfonamide radical is present in each and in the paraposition to the azo group. This was soon discovered and at once a number of investigators found that the para-amino-benzene-sulfonamide radical was really the important one and the simpler compound today known as sulfanilamide was developed.

#### MECHANISM OF THE ACTION OF SULFANILAMIDE

A large amount of well controlled laboratory work has proven conclusively that sulfanilamide in most instances can control or cure infections with the hemolytic streptococcus in laboratory animals. Certain unexplained phenomena, however, do occur. Some strains of the hemolytic streptococcus seem to be affected little if at all by the drug. Then again, some laboratory animals, although apparently cured, will die some weeks after cessation of treatment and postmortem demonstration of the streptococcus in the blood and other organs is possible.

The exact mode of action of this drug is not yet determined. No one has been able to demonstrate a direct antibacterial property. In vitro the drugs have little if any effect. A tremendous amount of experimental work has been done but as yet I believe one is safe in saying that no one knows exactly how infections are controlled or cured by this type of therapy. About as far as one can go is to say that something happens permitting the body defenses to overcome the infection.

The striking effect of sulfanilamide was a depression of the invasive properties of the organism. This effect was definite within eighteen hours in the case of bacteria circulating in tissue fluids or in newly invaded tissues.

In contrast, the presence of debris, human or bacterial, diminished the effectiveness of sulfanilamide on the hemolytic streptococcus. In each instance the organisms remaining in broken down tissue maintained their virulence. It is not known whether the debris itself had a protective action on the organisms or whether there was insufficient penetration of the drug into the locus.

It seems possible that sulfanilamide may alter the total metabolism of the microorganism or may interfere especially with some specific function such as its capacity to digest protein. In either case the presence of necrotic tissues appears to be of great importance. Sulfanilamide should be considered an agent which supplements and in no way supplants antibacterial immunity. These aspects of the problem are now under experimental investigation.

#### DOSAGE AND METHODS OF USING

These drugs have been administered by mouth, intravenously, subcutaneously, intramuscularly and intrathecally. When the patient is able to swallow, I think sulfanilamide should be given by mouth with an equal amount of soda. I can see no advantage in giving it in the vein, subcutaneously

or intraspinaly if it can be retained without too severe nausea for, like urea, it is distributed rapidly and evenly throughout all tissues of the body except bone. Giving it intravenously tends to increase the fluid in the vessels with increased elimination of the drug through the kidneys, thus defeating its own purpose.

Prontosil may be less disturbing to the stomach but two and one half times as much is required to raise the blood level as compared with sulfanilamide for its efficacy depends on the sulfanilamide liberated.

The fundamental problem is the maintenance of an effective blood concentration. More recent writers maintain that this can be secured without difficulty by oral administration provided the drug can be introduced into and retained by the stomach. The recent work of Osgood shows the effectiveness of relatively low blood values. On the other hand, Long who has had extensive clinical experience advocates a minimum concentration of 10 mg. per 100 cc. for the milder cases, reserving more heroic doses for the more fulminant infections. Such concentrations usually can be secured and maintained in adults by using daily divided doses of from 4 to 5 grams. In children with severe infections 1.0 gm. for twenty pounds of body weight has been recommended by Schwentker, Clayson, Morgan and Lindsay, the total dose for twenty-four hours, however, not to exceed 5 gms.

In spite of any set rules, each case is a law unto itself and must be so regarded. Undoubtedly some individuals are more sensitive to the drug than others. Therefore it follows that determination of blood concentration of sulfanilamide should be a part of the technic of administration in all severe cases when large doses are given. In addition blood counts at least every forty-eight hours should be available in order to detect any signs of dangerous leukopenia or anemia. If such checks are available, needed increases or decreases in the amount of drug administered can be estimated more intelligently. This means that cases so treated must be hospitalized unless such laboratory facilities are available in the home. In addition, no patient should receive this drug unless he is constantly under the care of a physician during the period of administration.

In my cases sulfanilamide, when effective, has acted favorably in from twelve to seventy-two hours and, now, when no improvement occurs in three days the drug is discontinued. Usually there is marked improvement and when the temperature has returned to normal the drug is stopped gradually over a period of one week.

Administration in the great majority of cases has been by mouth, using the tablet in conjunction with bicarbonate of soda, for the first forty-eight hours, giving approximately 1 grain to one pound of body weight each twenty-four hours. The subsequent dose is determined by the condition of the patient

at that time and the blood concentration of sulfanilamide. This table of dosage has been sufficient to maintain the blood concentration at from 5 to 10 mg. per 100 cc.

The evaluation of 200 cases treated with sulfanilamide therapy in the municipal hospital services is disappointing. This may be due in part to the enthusiasm of the two full time residents on ear, nose and throat and interns for operative procedure. Too many of these cases were operated upon too early. The total number of children seen with various nose and throat infections that were treated with sulfanilamide numbered 118, the ages ranging from 9 months to 14 years. The number of adults was 82, the ages ranging from 18 to 76 years with about an equal number of each sex. The types of diseases treated were acute otitis media, acute mastoiditis, acute sinus infections and acute throat and glandular infections about the head and neck with their complications. The duration of the stay in the hospital was from three days to four weeks. A patient remaining longer than one week was considered as having complications. Complications would be considered high in this series with a total of twenty-one. Complications ranged from mastoiditis, lateral sinus thrombosis, septicemia, subperiosteal abscess, pyelitis, meningitis, pneumonia, measles, brain abscess and tetany. There were five deaths, one from lung abscess, two from pneumonia and two from meningitis. Diagnoses were made in the usual way by careful history, complete physical examination, serology, smears and cultures. Identification of microorganisms was stressed. Findings in 75 per cent of the cases showed streptococcus first and pneumococcus second. Roentgenograms were taken and repeated if necessary. White cell counts covered a wide range from 6,500 to 40,000. I think toxemia from the onslaught of bacteria and sulfanilamide therapy would account for all secondary anemia in this series. Repeated transfusions were of great help in maintaining a high hemoglobin level. The temperatures ranged from 101 to 106 F. in most cases at time of hospitalization and fell rather rapidly in the first twelve to eighteen hours to near normal with a minimum saturation of the drug, then continued to drop during one week.

Many patients over the age of 40 present a type of chronic atrophic sinusitis with shrunken mucous membrane and turbinates, with a history of a lemon colored watery, highly infective, discharge and complain of a chronic pharyngitis. This is not a true ozena. These patients obtain relief from irrigation of the maxillary sinuses and by displacement treatment of the ethmoid and sphenoid sinuses with 1 per cent solution of sulfanilamide in an isotonic solution supported by neoprontosil by mouth. Microorganisms found in this type of chronic infection are staphylococcus and streptococcus, with streptococcus predominating. This is also the type of nose about which the patient complains bitterly of crusting, foul odor and taste, and

of having too much room inside, all due to the gradual atrophy over a period of years. The roentgen ray reveals all the sinus membranes thin and atrophic. These pictures would be classed as normal unless one is guided by clinical symptoms and signs. It has been my observation that this type of senile atrophy may be due to a number of causes or a combination of causes such as repeated onslaught of bacterial invasion in the mucous membranes from colds or influenza with lowered resistance from endocrine imbalance and avitaminosis. Displacement treatment with an isotonic solution of sulfanilamide biweekly and correction of avitaminosis and endocrine imbalance tend to make these patients a lot happier. Twenty thousand units of estrogenic substance in 15 cc. of almond oil as a nasal spray daily stimulates the mucosa with a resultant decrease of the intranasal space and disappearance of crusting and odor.

#### MASKED SYMPTOMS

After intensive sulfanilamide therapy with other regular supportive treatment such as repeated blood transfusions and intravenous saline, a drop in temperature, normal white count and a general increase in the patient's well-being does not give a true picture of the patient's condition. Sulfanilamide should be decreased gradually and not discontinued and surgery to relieve abscess formation should be done. It has been illustrated by several cases I have had of acute mastoiditis of the fulminating type in which the roentgen ray gave a clear picture of the cell tabeculae still intact that, if clinical symptoms still point to operative interference, it is well not to be led astray as often this type of mastoid goes on to intracranial involvement.

A number of methods of checking concentrations of sulfanilamide have been developed by different laboratory workers. The Todd and Sanford test is used in the municipal hospitals.

Acute streptococci infections are known to cause most middle ear infections such as early otitis media, streptococcal throats, pneumococcal and streptococcal sinus conditions and glandular conditions about the head and neck. In acute mastoiditis, after central necrosis has occurred, it is impossible to influence greatly the abscess already formed because the blood containing the drug no longer reaches this region. In spite of this it should be given as a prophylactic measure against the spread of infection through the blood stream or cranial cavity. Because of the great amount of work being done on this subject, every form of reaction now known has been reported. Most of these reactions are due to overdosage, idiosyncrasies and allergic manifestations. Most of the reactions noted to date are not of a serious nature and most of the severe ones can be forestalled if the physician is on guard and withdraws the drug in time. The drug should never be given with sulphates as this combination tends toward production

of sulfhemoglobinemia. Coal tar derivatives also should be withheld.

#### ALLERGIC MANIFESTATION OF SULFANILAMIDE

While the majority of patients tolerate this drug without untoward effect, a number of reactions have been described, some of which are undoubtedly allergic in nature. These include maculopapular rash with pruritus, scarlatiniform eruptions, sneezing, asthma, urticaria, purpura and granulocytopenia. Fever frequently accompanies the reaction as is so often the case in other forms of drug allergy. The acute hemolytic anemia, toxic optic neuritis and photosensitizations that have been described are not as clearly allergic.

It is of interest that all of the cases of apparent sulfanilamide sensitization reported in the *Journal of the American Medical Association* during 1937, only one patient experienced symptoms promptly after the initial dose. In the majority of cases from seven to eleven days elapsed (occasionally five) before advent of symptoms. This strongly suggests the usual incubation period prior to the development of sensitization. The one exception was a case reported by Salvin of a young man with gonococcus urethritis who developed generalized pruritus, sneezing, shortness of breath and lacrimation within twenty-four hours after what he assured the physician was the first dose of the drug. Discontinuance of medication resulted in relief. Patch test applied later was positive. Control tests with other sulfur and related compounds were negative. A subsequent small dose of sulfanilamide caused return of itching and sneezing.

The most instructive series is that reported by Hageman and Blake who found that 15 per cent of 134 cases under continuous sulfanilamide therapy reacted usually between the seventh and tenth days with morbilliform rash and pyrexia. Sometimes the rash was urticarial, occasionally hemorrhagic, and pruritus was a prominent symptom. Fever ranged from normal to 106 F. The resemblance to serum sickness is obvious. Generalized adenopathy and arthritis were not observed in the series. The drug fever occurred as early as the fourth day in two cases and as late as the thirteenth in one.

#### ALLERGY TO SULFANILAMIDE (DR. LOUIS TUFT<sup>25</sup>)

"The recent introduction into clinical use of sulfanilamide and closely related compounds in the treatment of infectious diseases quite naturally raises the question as to the possibility of untoward reactions resulting from their administration. Considering the enormous amount used, the number of reported untoward reactions is surprisingly small. Most individuals tolerate these drugs rather well at least insofar as allergy is concerned. Not all of the reported reactions are definitely allergic in character. Many undoubtedly are the result of the toxic action of these drugs which should be differentiated whenever possible. Such symptoms as cyanosis, hemolytic anemia, optic neuritis and

the like are definitely toxic in character. On the other hand, the occurrence of fever and an eruption, either morbilliform, scarlatiniform or urticarial, suggests that the reaction is allergic. As with other forms of drug allergy, the symptoms and clinical course are similar to that of serum allergy or serum sickness, that is, the reaction does not appear after the initial dose but only after an incubation period of eight, ten or more days, and especially if there has been an interruption in the course of treatment sufficient to permit sensitization to occur. Furthermore, fever and eruption are outstanding symptoms of the acquired or induced type of serum allergy, but without the adenopathy or arthritis. The one exception is a case reported by Salvin in whom the initial dose induced sneezing, lacrimation, dyspnea and general pruritus within twenty-four hours. These symptoms disappeared when the drug was discontinued and reappeared again on subsequent administration. Such symptoms are distinctly different from the usual type with sensitivity to sulfanilamide just as happens in an aspirin-sensitive asthmatic patient.

"It is evident, therefore, that allergy to sulfanilamide is not very prevalent. It will be less significant if clinicians will be careful not to interrupt its administration for a long enough period to permit sensitization. If it does occur it is wise to discontinue the administration of the drug or substitute another compound. The treatment of the allergic reaction is similar to that of serum sickness."

The following reactions have been reported in the literature: (1) general: malaise, faintness, vertigo, headache, tinnitus and lassitude; (2) central nervous system symptoms: mental confusion and optic neuritis; (3) gastrointestinal: nausea, vomiting, pyrosis, anorexia, abdominal pain; (4) hepatic: acute hepatitis with jaundice and cholemia; (5) renal: transient hematuria and albuminuria; (6) cardiac and circulatory: shock, precordial pain, anoxemia and fresh cardiac damage in predamaged hearts; (7) cyanosis: prompt, delayed or progressive; (8) acidosis; (9) cutaneous: morbilliform, scarlatiniform, urticarial, vesicular and purpuric lesions; (10) febrile: irregular, usually pyrexia after week of treatment; (11) anemia: acute progressive hemolytic anemia, and (12) leukopenia: delayed but rapidly developing agranulocytosis.

#### COMMENT ON REPORTED CASES

Approximately 40 per cent of the adults and 15 per cent of the children in my series of cases showed some toxic manifestations with a minimum of saturation. Most of these reactions were mild because the early use of the drug was overly cautious. Mild cyanosis, nervousness and nausea were seen often but abdominal and precordial pain, acidosis, rash, jaundice and anemia were seen rarely. In my series of cases peritonitis, acute mastoiditis and any acute inflammatory process about the head and neck were controlled rather uneventfully if the patient received adequate minimum dosage of sul-

fanilamide early (not to exceed 5 mg. per 100 cc. blood concentration). If the patient was seen after the start of abscess formation, sulfanilamide therapy was of less value. Treatment is always continued with the hope of controlling any other complications which might arise. In cases of well developed abscesses, surgical drainage always brings prompt relief. It is well to keep in mind that sulfanilamide should not be withdrawn too early and that it should be stopped gradually. When withdrawn too early relapses may occur. One often hears the statement that sulfanilamide is not effective in chronic disease. With clinical symptoms of the antibacterial forces not strong enough to overcome the infection, one may have the occasional migration of organisms to new tissue. I think sulfanilamide is effective in this type of case. It is agreed generally that sulfanilamide does not inhibit antibody formations. Antibody formation stimulation is due to the invasion of the offending organism and I think the best results in selected cases are due to the patient having in the blood stream just under the minimum concentration of sulfanilamide. In this manner the patient receives the maximum results of antibody formation with minimum toxic reactions. Their malaise, gastrointestinal and central nervous system reactions are practically eliminated. Every case being a law unto itself, one cannot set hard and fast rules of dosage. This drug after all is one more weapon added to medical armamentarium. Nothing should be left undone in the way of supportive treatment such as drugs and transfusions used previously in the fight on streptococci. There has been an appreciable drop in my surgery cases such as peritonsillar abscess, acute mastoiditis and all inflammatory glandular conditions about the head and neck. Conservatism, adequate testing, sulfanilamide supportive measures and careful observation during convalescence have decreased the percentage coming to surgery. Early identification of the offending organism with type is essential.

#### CONCLUSIONS

1. Sulfanilamide has a halting and depressing effect on certain types of streptococci.
2. The effectiveness of sulfanilamide therapy is most striking in acute lesions.
3. The patient receiving the drug should be under constant supervision by the physician with forty-eight hour blood concentration estimations.
4. Twenty-four hour blood counts should be made for the detection of anemia or leukopenia.
5. Many cases showing cyanosis have received overdosage.
6. All allergic manifestations and idiosyncrasies verge on the unusual in the total percentage of cases.
7. The otolaryngologist has one more effective weapon to add to his armamentarium.

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In reporting an apparent cure of a typhoid carrier by means of the drug soluble iodophthalein, James R. Enright, M.D., Honolulu, T. H., in *The Journal of the American Medical Association* for January 18 states that his case is an additional indication that further trial of this substance is warranted in typhoid and paratyphoid carriers. A previous report by two other authors cited its apparent success in a carrier of paratyphoid, a disease similar to typhoid.

After only three doses of the drug by mouth, the stools of Dr. Enright's patient were negative for the typhoid organisms. They will be checked for at least a year, he says, and if they continue to be free of organisms the patient will then be classified as carrier free.

## DIAGNOSIS AND MANAGEMENT OF GALLBLADDER DISEASE

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The symptomatic indications of gallbladder diseases are largely biliary colic, soreness and tenderness under the right costal arch, indigestive symptoms of biliary nature and acute inflammatory reactions in the gallbladder.

Biliary colic needs little comment. The diagnosis is obvious. Subcostal soreness and tenderness on the right side may be of a temporary nature following biliary colic or it may be constant. Constant soreness and tenderness are associated with hydrops of the gallbladder, chronic empyema, chronic inflammatory changes in the gallbladder, extrinsic adhesive pericholecystitis, hepatitis or an overdistended atonic gallbladder. The gallbladder may be palpable when distended by accumulated secretions or inflammatory reaction.

Occasionally there is observed an atonic, overdistended, slowly emptying gallbladder without stones or apparent pathological condition, with constant symptoms of soreness and tenderness, in which the cholecystogram shows slow or delayed emptying of the dye. Atony is so pronounced that there is a constant distention and stasis from failure to contract and expel the accumulated bile contents. Usually cholesterol stone, a cholesterosis or strawberry gallbladder is found at operation. Cholecystectomy relieves this distress and cures the patient.

Chronic dyspepsia unrelated to other organic lesions and associated with gas and disagreeable reaction to fat, fried foods and roughage is suggestive of biliary or gallbladder origin. Frequently this type of indigestion is associated with pylorospasm and hyperchlorhydria and a symptomatology suggestive of ulcer on the posterior wall of the duodenum. Cholecystographic studies and gastrointestinal investigation usually reveal the true nature of the disorder.

Acute cholecystic disease may present various degrees of inflammation. The diagnosis is confused sometimes with perforated duodenal ulcer, acute pancreatitis and high lying acute appendicitis. Localized tenderness and rigidity, with previous history of biliary colic plus the clinical observation, usually point to the true nature of the inflammatory process. Severe acute cholecystitis warrants serious consideration and mature surgical judgment concerning the decision for immediate operation. Various opinions are held by competent and experienced surgeons concerning the advisability of immediate operation. The position of former conservatism has greatly changed in the last few years and many leading surgeons have become radical in their management of acute cholecystitis. They

have proved several points; first, that perforation is more common and more often impending than was formerly thought and, second, that these cases can be operated upon safely with little or no increased technical difficulty.

They compare acute cholecystitis to acute appendicitis and advise early and prompt operation. Conservative opinion, however, does not view the situation in the same light and contends there is no comparison. The appendix, when it perforates, especially near the base, empties the cecal and bowel content into the abdominal cavity, often with little or no walling off, due to the suddenness of the perforation and lack of omental protective reaction. The gallbladder, on the contrary, is well protected under the liver by a fortress of duodenum, colon and omental flaps. These usually are well adherent and offer good protection before leakage of the gallbladder occurs. Besides, it is noteworthy that the gallbladder is capable of enormous distention without rupture and the muscular wall is resistant to infection. Gangrene, necrosis and perforation do not occur immediately. The gallbladder rarely perforates into the free abdominal cavity but usually results in a pericholecystic abscess which is, in my experience, always associated with calculous obstruction of the cystic duct with subsequent edema and localized avascularity. It is contended by the conservative group that in most instances the acute process will subside without perforation and that operation can be performed when the patient is in better physical condition for surgery, has been adequately prepared and the edema and inflammatory reaction have subsided. Under such a condition vascularity is less, infection is more or less inert, rupture of the gallbladder by handling and resulting contamination is eliminated, the biliary ducts are more easily visualized and extension of infection up into the liver by the lymphatics from trauma is not likely. However, these are more fancied obstacles than real because anyone who has operated upon the acutely diseased gallbladder is struck with the ease with which the gallbladder is separated from its bed and the prompt and adequate control of hemorrhage by hot packs to the gallbladder fossa. In fact, I have never seen a hemorrhage from this source that could not be controlled.

A more rational viewpoint is the middle of the road procedure. Each case is a law unto itself. It is admitted that no one can forecast or tell definitely actual or impending perforation, but clinical indications are a good guide. An increasing pulse rate, rising fever, progressively rising blood count, increasing rigidity and definite progressive toxicity warrant immediate operation. In all instances, one has some hours for observation during which time preparatory measures for operation can be carried out and the patient better fortified for the procedure. Many times during this period of observation and preparatory treatment the process will show signs of abating. However, having experienced some perforations and seen others almost ready

to leak, I have in recent years adopted the policy of being more radical in acute cholecystitis than formerly. I have been surprised at the ease with which the operation is performed, the excellent postoperative recovery and the reduced period of incapacity. Sanders has reported extensively upon the frequency of perforations of the gallbladder. His report showed the rarity of perforation in early cholecystitis but emphasized the frequency in chronic disease of the gallbladder with long existing calculous disease. It illustrates the complications of delayed surgery. The gallbladder rarely perforates unless a stone is impacted in the cystic duct. Several acute cases operated on in the last year have all shown cystic duct calculous obstruction and have given a long history of chronic gallbladder disease. A word of warning is that in acute cholecystitis with a markedly distended gallbladder, it is extremely dangerous to place the patient on the abdomen for roentgen ray investigation. I have seen one instance of perforation during this procedure.

In chronic cholecystitis the gallbladder may adhere to surrounding structures, duodenum or transverse colon, or even perforate and form a permanent anastomosis. Large stones may pass and produce intestinal obstruction and ascending infection may result in cholangitis. A firmly adherent gallbladder should be separated carefully, leaving if necessary a portion of the serosa attached if danger of entering an adherent viscus is probable. A perforation between the gallbladder and duodenum may cause no harm and function as if surgically performed. To disconnect it and attempt to close the indurated duodenum may result unsuccessfully. Ascending infection into the biliary tract may be prevented by ligating the cystic duct, making certain to preserve the cystic artery. The common duct must be patent. A perforation between gallbladder and colon results in cholangitis and extensive hepatitis and the gallbladder must be removed and the colon repaired or exteriorized and the opening closed at a later date. Extensive hepatitis and liver damage are always factors in long standing gallbladder disease. Graham, Judd and Jackson have shown these to be present always in variable degrees, dependent upon the duration and extensiveness of the infection.

A plain radiogram of the gallbladder may reveal stones, size of the liver, kidney shadows and gas distribution. Cholesterol stones are rarely shown but calcium ones are demonstrated in about half the cases. Even when stones are found, cholecystographic studies should be made.

Cholecystography has contributed immeasurably to knowledge of gallbladder disease and the functional capacity of the gallbladder. Stones are more frequently detected, deformities due to extrinsic adhesions frequently are observed, adenoma or papilloma are diagnosed, the contractibility and tonicity of the gallbladder is determined and its filling defects diagnosed. The visibility of calcium stones is

increased from 35 or 40 per cent to 75 per cent and cholesterol stones are made more visible. The accuracy of determining filling defects and the non-functioning gallbladder is well above 95 per cent. However, a normal cholecystogram does not free the gallbladder from incrimination. Stones may not be visualized and function may be demonstrated yet the clinical symptoms may indicate gallbladder disease and cholecystectomy result in cure. The accuracy of the test depends upon the absence of jaundice, functional capacity of the liver, cooperation of the patient, assimilation of the dye and absence of a fatty diet. Intravenous administration has some advantages and I have observed no ill effects from its use. Careful study of early gallbladder disease may reveal poor visualization, lack of dye concentration, slow emptying rate and poor contractibility. Lockwood finds these observations in the so-called strawberry gallbladder or cholesterosis of the gallbladder.

Ductal invasion by stone or involvement by inflammation, tumor, stricture or obstructive pancreatitis result in jaundice, liver damage, increased hepatitis, cholangitis and, ultimately, chills and fever. It materially complicates surgery, impairs liver function and requires special preparatory measures before surgery.

The liver has many functions; functions of assimilation and appropriation of nutrient elements and functions of excretion of bile, solids and by-products of liver metabolism. Jaundice, cholangitis and hepatitis inhibit or retard these properties. No liver functional test is adequate in the simple localized pericholecystic hepatitis of acute or chronic gallbladder disease. Sufficient functional capacity of the liver is still present to demonstrate a normal liver excretory test. However, disseminated liver impairment as is present in jaundice markedly reduces liver function and is demonstrated by hippuric acid deficiency results.

Jaundice is of three types, obstructive, hepatic and hemolytic. The type of jaundice must be determined and the absence of pain does not mean the jaundice is not obstructive. Painless jaundice of an obstructive nature may occur in pancreatic disease, ductal tumor or even stone formation. Toxic hepatitis must be eliminated as a cause of the jaundice before operation is performed. Green, et al., consider that bile pigment is produced by the reticulo-endothelial system as a by-product of destruction of red blood cells and not by the liver cells. The pigment is modified as it is excreted by the liver cells and produces the changes in the van den Bergh reaction. Unchanged bile pigment in the blood produces an indirect test and after liver change the test may become direct and bile appear in the urine. Kent states that it only differentiates between the true hemolytic jaundice and parenchymal or obstructive jaundice. It does not distinguish between the ductal obstructive type and the liver type. Even in familial or hemolytic type of jaundice there is ultimately liver damage and the changing

reaction from indirect to direct is misleading. Kent considers the van den Bergh test of little assistance in differentiating the types of jaundice, especially the ductal obstructive and that due to liver degenerative changes.

Blood contains cholesterol and cholesterol esters in about equal proportion. The liver regulates the amount of cholesterol in the blood and disposes of it by excretion. The esters are formed in the liver by cholesterol and fatty acids and the liver may split up the esters again into fatty acid and cholesterol. In early obstructive jaundice, both cholesterol and cholesterol esters should be increased in the blood correspondingly while later, in liver cell destruction from jaundice, there will be a decrease of both with the esters out of proportion to the cholesterol. The damaged liver may not be able to unite cholesterol and fatty acids to form the esters. The drop in the cholesterol is not explained. Kent states that cholesterol may not be absorbed readily from the intestinal tract in the absence of bile due to the obstructive jaundice just as vitamin K is not absorbed in jaundice. Hemolytic jaundice should show no change in proportion of cholesterol and cholesterol ester content. This test is of some importance as in early obstructive jaundice the cholesterol-cholesterol ester content of the blood will be increased in normal ratio. Long standing liver damage from obstructive jaundice may alter these findings and this ratio of percentage. The duration of jaundice and the clinical course of the patient must be known before evaluating cholesterol determinations. Epstein states that this test is most important when considered with accompanying icteric index determinations; with a decrease in the icteric index an increase in blood cholesterol or cholesterol esters should soon be evident.

The bleeding tendency in jaundiced patients is well recognized. Efforts to reduce this hazard by blood transfusions and calcium preparations have not resulted in much success. The hemorrhagic tendency is due to a prothrombin deficiency. Snell states that the bleeding tendency in jaundice is due to a deficiency of prothrombin resulting from inadequate appropriation of a substance in the diet that requires bile for absorption and that this substance is vitamin K. Marked reduction of prothrombin may occur before great bleeding tendency occurs, usually not until it has reached from 20 to 30 per cent of normal. Bile salts are essential for fat soluble vitamins and when bile is obstructed from entering the intestinal tract, bile must be given along with vitamin K to promote absorption. The clinical results have been highly satisfactory. The prothrombin can be restored to normal and hemorrhagic tendency eliminated. Vitamin K will act only in the presence of bile in the intestinal tract. Jackson speaks of a coagulant containing oxalic acid obtained from a common weed, shepherd's-purse, discovered by Steinbery, as being of value.

Besides the adequate restoration of glycogen in the liver deficiencies associated with cholecystic disease and especially in the parenchymatous changes due to jaundice, cholangitis and hepatitis, sulfanilamide has been used with favorable results by Crile in the treatment of cholangitis. Sulfanilamide is excreted by the liver in experimental biliary fistulae in the same ratio as it is found in the blood. Both in experimental animals and clinically, the chills have been observed to subside and the temperature to return to normal. Water balance must be restored and maintained and blood transfusions are of great benefit in the preoperative and postoperative management.

Exploration through a transverse or longitudinal incision is a matter of personal preference. The transverse incision conserves muscle innervation. The appendix is not accessible by this approach. Sanders advocates the transverse approach because of nerve conservation and reduction of postoperative hernia. Cholecystectomy is always preferable to cholecystostomy, the latter being employed only in the acute conditions when obviously extensive surgery should not be done, when there are mechanical difficulties as in an extremely high lying liver with inaccessible biliary ducts and in the very aged or in those with coexisting serious disease. When surgical drainage is employed in an acute condition of the gallbladder, cholecystectomy should be performed some weeks later. Permanent biliary fistula after cholecystostomy is the result of cystic duct obstruction, usually from an overlooked stone. Cholecystectomy is necessary for cure.

In cholecystectomy, it is essential to visualize the cystic, common and hepatic ducts and no excision should be attempted until this can be accomplished. The common duct may be pulled and fixed to the pelvis of the gallbladder and give the impression of a thick cystic duct. The pelvis should be well isolated and freed from any adherent structures. Anomalies of the cystic artery, hepatic artery and of the extrahepatic bile ducts must be kept in mind always, especially the cystic artery which frequently is placed abnormally. Flint found that anomalies of the ducts and vessels existed in 65.5 per cent of 200 cadavers. This was confirmed by Brown. Lurje found anomalies of the cystic duct in 53.1 per cent of 194 cadavers.

Troublesome bleeding from the cystic artery can be controlled by passing the left index finger into the foramen of Winslow and compressing the vein and artery between the index finger and thumb. The field then can be cleared of blood and the bleeding artery controlled. Frantic attempts to control bleeding in a field of blood may result in ductal injury and serious damage.

Necessity for drainage following cholecystectomy is a disputed question. There are many who have abandoned routine drainage. I have closed many cases without drainage but always with the feeling that accessory bile ducts may be present resulting, subsequently, in bile peritonitis, a condition diffi-

cult to diagnose. Also bile may leak from the gallbladder bed. I feel that a drain does no harm, can be removed in forty-eight hours, does not conduce to hernia and may save reopening the abdomen. I now always insert a small drain. Accessory bile ducts are more frequently present than formerly was thought.

The common duct should be opened and explored in all cases with history of jaundice, when a stone is palpated and when the duct is enlarged. The duct always is enlarged when a stone is present. Pancreatic obstruction also will produce an enlarged common duct. The cystic stump should be examined carefully for a stone at the junction of the common duct. A stone left at this site may produce pain and jaundice and may require secondary operation. This is not an uncommon finding in secondary surgery for biliary tract disease.

Exploration of the common duct for stone should be made before the gallbladder is removed. It serves as an excellent guide and identifies the anatomical landmarks. Needle aspiration should be employed for positive identification of the duct before it is incised. Exploration by scoop and sounds through into the duodenum is essential. When the gallbladder is small and the ducts are bound in old, dense adhesions, it is best to open the small contracted gallbladder and locate and explore the common duct using the cystic duct as a guide, enlarging and extending the incision as necessary. It often is difficult to locate the common duct when the gallbladder is small and there are dense adhesions without a definite plan of procedure. Much damage to ducts may occur or the field suddenly may be filled with blood. I have found this is a simple way that leads directly to the common duct. The small stub of gallbladder then can be removed. Catheter drainage or drainage by T tube is instituted. When there is chronic liver disease, I prefer the T tube. The tube is left in situ a variable period of time, for from two weeks to months, depending upon the chronicity of the case and the degree of cholangitis. The tube should be clamped off frequently and bile permitted to flow directly into the duodenum. If the duct is open, there will be no pain. Pain suggests a remaining stone or a tight sphincter Oddi. A plain roentgen ray film will not show a remaining stone in the biliary ducts. Visualization of the ducts by a contrast media demonstrates well the patency of the hepatic and common bile ducts. The work of Best, Walters and others has shown the value of this procedure. It should be a routine procedure in all common duct surgery for stone.

The fragmentation of remaining stone or stones may be accomplished often by instilling a few cubic centimeters of ether into the common duct for a few seconds daily. The ether may be diluted with alcohol. The sphincter should be dilated by amyl nitrite. Warm olive oil may be used and the intraductal pressure increased by dehydrocholic acid. The biliary flush advocated by Best for overlooked

stones is of clinical value. It is based upon increasing the flow of bile by dehydrocholic acid, relaxation of the lower end of the common duct by magnesium sulphate, by the giving of fats such as cream and olive oil and the irrigation of the common duct through the T tube, or, biliary fistula with warm normal saline followed by warm olive oil or at times with warm lipiodol. The tube should be clamped or sinus packed for long periods during the day. Best stresses a three day treatment followed later by repeated attempts with the same procedure to empty the common bile duct of remaining stone, mucous plugs, inspissated bile or blood clots. The routine or more frequent exploration of the common duct advocated by Lahey will, as stated by him, result in fewer overlooked stones. Routine exploration, except by a master surgeon, will result in ductal damage and serious subsequent disability which will more than outweigh the benefit derived.

I make no attempt to discuss the ductal injuries requiring reconstruction operations, plastic repair or anastomosis to stomach or duodenum.

Because of the frequency of pancreatic disease, inflammatory or malignant, as a causative factor in jaundice, I wish to call attention to the beneficial effects obtained from anastomosing the gallbladder, if present, or the enlarged common duct to the stomach or duodenum. It is frequently impossible to determine the true nature of the pancreatic obstruction. The hardness and induration is no definite criteria to the underlying pathological condition. Inflammatory induration may simulate malignancy. Biopsy is inadvisable because of bleeding and pancreatic enzyme digestion. Even in malignancy, the results are good and of long duration as the disease is slow growing. Danger of ascending cholangitis and infection is not as frequent clinically as in experimental observations. The anastomosis should be made where it is most feasible and the opening should be small. I have always preferred cholecystgastrostomy to other procedures. If the stomach and duodenum are bound down and inaccessible, cholecyst-jejunostomy may serve equally well.

The hepatorenal syndrome as a cause of death following operation upon the biliary tract has been discussed widely. It is characterized by an increase in temperature and pulse rate and a progressive anuria with subsequent uremia and death.

Garlock and Klein emphasized the glomerular changes in the kidney resulting in glomerulonephritis as the outstanding pathological finding. The liver findings were variable and of minor importance to those found in the kidney. Boyce and McFetridge were able to produce in animals a syndrome similar to this by the sudden decompression of a previously obstructed biliary tract and the establishment of an external biliary fistula. Crile has spoken of the danger of sudden decompression of an obstructed common duct resulting in hepatic circulatory imbalance, hepatic failure and death.

Helwig has called attention to the clinical relationship of the liver and kidneys. The outstanding kidney pathological condition was a tubular nephritis. Clinically, it is observed more frequently in long standing chronic gallbladder disease and in those cases with ductal complications and marked liver damage.

Other causes of death are suppurative cholangitis ending in multiple liver abscess resulting from long delayed surgery. Rarely is hemorrhage a fatal factor even in the presence of obstructive jaundice if proper preoperative measures have been employed. Errors in judgment or technic are factors in a small percentage. Unavoidable pneumonia, bronchial occlusion with secondary pneumonia, heart failure, coronary occlusion and pulmonary embolism occur unexpectedly.

The end results of operation for cholecystitis or ductal stone complications are dependent upon early operation after the onset of symptoms and the thoroughness of the procedure. Residual symptoms are the result of extensive hepatitis, cholangitis, surgical catastrophes and overlooked stones.

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#### EYE CARE DURING CONVALESCENCE

Amusements that are restful to the eyes are best for convalescent children, Constance J. Foster, Great Neck, New York, suggests in *Hygeia, The Health Magazine*.

"During convalescence from any prolonged or serious sickness," she points out, "the eyes are weak and in need of special protection from strain. Yet this is the time when the child is frequently given books to read or amusements that require close visual application. It would be wiser to encourage periods of rest for the eyes by reading aloud to the child or providing him with projects that do not overtax the already weakened nerves and muscles of the eye."

## ACNE VULGARIS

NEW CONCEPT OF ETIOLOGY: A DISTURBANCE OF  
LIPOID METABOLISM  
EFFECTIVE TREATMENT

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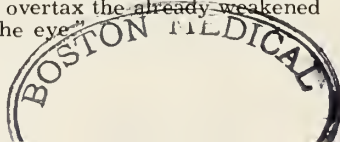
Various treatments proposed for acne seem to me to have been designed chaotically with little agreement being found in the writings of many authors except (1) that roentgen radiation has a favorable influence through its ability to disable the sebaceous glands; (2) that sulfurous astringents have a beneficial effect locally; (3) that diet, although none has been planned consistently to accomplish a particular objective, is a good idea, and (4) that removal of a comedo may prevent the development of an acne pustule at that place. Corynebacterium acnes has been found regularly in cases of acne and with practically equal regularity in normal skin. Vaccinal "etiologic" treatment with this organism, once popular, was believed by some to have some effect but now has fallen into disuse<sup>1</sup> for prolonged clinical experience has supplied convincing evidence that dependable therapeutic results are not so to be obtained. Acne has something to do with hormones,<sup>2</sup> with glands of internal secretion, with pubescence and perhaps with pigmentary function.

Heredity is responsible for a predisposition to acne. The disease may be familial.<sup>3</sup> Carbohydrate metabolism<sup>4</sup> has little if anything to do with its etiology. Bacteria probably have nothing to do with it. *Demodex folliculorum* commonly leads a saprophytic existence in the comedones.

Facts which seem to me to be consequential and significant in formulating an etiologic understanding of acne follow:

1. Seborrhea generally precedes the development of acne and conspicuously accompanies it.
2. Comedones and milia generally appear preceding its development. They may exist without the development of inflammatory lesions and they more or less conspicuously accompany acne.
3. Acne has something to do with the diet.
4. The patient with acne is usually one who can scarcely get enough sleep but, after nine hours in bed, is hard to awaken and also feels tired later in the day.
5. The patient with acne is often constipated, is generally depressed emotionally and, if a woman, is likely to have menstrual difficulties generally in the form of delay, irregularity and scantiness of flow.
6. An acne pustule clumsily squeezed becomes a bigger, cystic sore.
7. An acne lesion of the deeply seated, cystic, inflammatory kind is made worse by every kind of

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local treatment including incision and roentgen therapy but it is likely to resorb eventually if it is let alone for several weeks.

8. Vaseline, and some other oily substances to an even greater degree, promote the development of acneform lesions<sup>5</sup> when rubbed on the skin.

9. Iodides<sup>6</sup> always make acne worse. In some persons without acne, iodides provoke the appearance of acne. Other persons tolerate iodides in considerable dosage without developing acneform eruptions. Iodides given to patients with toxic hyperthyroidism rarely provoke acneform eruptions.

10. The patient with acne is a person undergoing the changes of puberty or is a young adult with uncommon exceptions.

11. Acne is worse in the summertime. It undergoes irregular and seemingly unpredictable exacerbations,<sup>7</sup> new lesions appearing in crops.

12. Comedones and acne vulgaris appeared in a high proportion of the children of two children's homes during a period when I was observing the children closely, and the onsets of the epidemics shortly succeeded the institution of routinely administering cod liver oil.

13. Acne often appears in slender young women soon after they undertake to gain weight by drinking milk and cream in unusual quantities.

14. Acne appears with notable rarity in avitaminosis A.<sup>8</sup>

15. In a patient's skin which shows plain evidence of chronic roentgen damage, seborrhea continues and inflammatory lesions appear from time to time.

16. A well defined clinical group of acne cases comprises about 10 per cent of all cases.<sup>9</sup> In these the lesions are rosy-yellow, rosacea-like, or better xanthoma-like, and occur with oily seborrhea and few comedones in persons who are not tired as the usual patient is and whose hair coloring has a reddish tint.

#### ETIOLOGY

I propose a systematic interpretation of acne which, I believe, meets these observations and others successfully. I reduce the statement of etiology and therapy to its bare outline.

Seborrhea is an excessive flow of oil from the epidermis and its glands. A comedo is a collection of oily matter. A milium is comedo material separated from air by a thin layer of epidermal tissue. An acne lesion, shallow or deep, is a foreign body reaction to oily material, liquid or solid at body temperature. The whole process is a failure of the bodily chemical economy to manage oils successfully. It has nothing to do with parasitism. Seborrhea, comedo and acne vulgaris are analogous to diabetes mellitus. In diabetes, the excess of carbohydrate beyond the ability to metabolize it collects in the body and above a certain concentration pours out through the kidneys; diabetes is controllable by reducing the carbohydrate intake and, if necessary, by enhancing the ability of the body

to metabolize carbohydrate by giving insulin. In acne, the excess of lipid beyond the ability to metabolize it collects in the sebaceous glands of the face and elsewhere and provokes pustular foreign body reaction; acne is controllable by reducing the lipid intake and, if necessary, by enhancing the ability of the body to metabolize oil by giving thyroid extract.

Acne vulgaris may be defined, in my opinion, as the disease which consists in tuberculoid<sup>10</sup> inflammatory reaction to sebum which is excessive because of the patient's improper metabolism of lipid. It is a pustular lipoidosis. In contrast to the mesodermal lipoidoses (xanthomas) acne vulgaris is a primarily epidermal lipoidosis with secondary inflammation. Acne vulgaris depends (1) on the excessive dietary intake of lipid or lipochrome substances or both of which milk, milk products, pork, chocolate, carrot, orange and spinach are abounding sources; (2) on hormonal influences through the function of the thyroid gland in the control of lipemia, thyroid gland function being itself dependent on other endocrine apparatus and their balance and integrity; (3) on vitamin intake, through the need for vitamins in maintaining epithelial integrity, and through the antagonism<sup>9</sup> between carotene and vitamin A on the one hand and thyroxine on the other; and (4) on iodine,<sup>13</sup> in the excess of which hyperlipemia occurs in hypothyroid individuals but not in normal ones, and in the absence of which the thyroid gland cannot long function normally.

Sensitivity to iodine on the part of the patient with acne is due to his hypothyroidism. Give the acne patient iodine and thyroid extract in adequate amounts and he will not suffer eruption for his tendency to hyperlipemia is controlled with thyroid extract. In diet for acne I urge the use of iodized salt and it is tolerated.

Many studies have been concerned with attempts to control acne vulgaris by the use of various hormonal substances. Without reviewing them in detail, I believe it fair to say<sup>9</sup> that the results have been irregular, unsatisfactory and unpredictable. I believe that hormonal therapy in the past has erred because it has missed the point of the need for balance between diet, metabolism, autogenous hormonal activity and medicinally supplemented hormonal substances. I again make the analogy between diabetes mellitus and acne vulgaris. What use would insulin serve if diet were not simultaneously and accurately taken into consideration?

Seborrhea is the first cutaneous manifestation of failure to metabolize oil. It is a feature of acne vulgaris throughout for it is a manifestation of the basic pathologic physiology. Comedones and milia represent the retention of sebaceous matter within the skin glands. They may or may not provoke foreign body reaction. Bloch<sup>2</sup> assumed that inflammation implies infection; thus he overlooked the fact that the inflammatory phase of acne is foreign body reaction to lipid, a tuberculoid reaction which has

induced pathologists to confuse acne with tuberculosis, a reaction which is the inevitable result of the introduction of fatty material into the mesodermal portion of the skin.<sup>10</sup> It can result from bruising a comedo, from injuring a sebaceous cyst and from injecting into the skin chemical fractions of *Mycobacterium tuberculosis* or chemical derivatives of olive oil or of cod liver oil. I hypothesize that a solution of the continuity of the epithelium (which separates comedo lipid from mesoderm) arises as a result of the presence of the oily comedo, which dissolves lipoids including vitamin A, preferentially from the epithelial cells adjacent to it. Cod liver oil, rich in vitamin A, abets the development of comedones to an astonishing degree in adolescent children who are given the oil in excessive quantities; but inflammatory lesions are few in these children because, I believe, the integrity of the epithelial barrier is maintained. But when the comedo is the result of hyperlipemia due to hypothyroidism, rather than from mere hypervitaminosis, the epithelial barrier is more likely to become defective and inflammation is more likely to complicate the presence of the comedo.

I have found that a carefully designed<sup>18</sup> low fat diet, conscientiously followed, is promptly effective in diminishing seborrhea. While untoward symptoms of lack of unsaturated fatty acids occur in rats on a strict low fat diet, a human being on the same diet suffered no damage but actually felt the better for it.<sup>11</sup> I have seen no ill effects within four months from the low fat diets that have been followed by more than 300 of my patients with acne; in fact, they have been relieved of fatigability, constipation and mental depression to a noteworthy degree while their chief complaint gave ground. A few have developed difficulty with dark adaptation which has responded promptly to doses of vitamin A concentrates. All the constitutional symptoms of the patient with ordinary acne are due to his relative hypothyroidism. By "relative" I mean the inadequacy of his autochthonous hormone to cope with the quantity of lipid he has been ingesting. Constipation is not a cause of acne; the acne patient is constipated for the same reason he has acne. Menstrual difficulties with acne are usually on the same basis and so is anemia. These are all symptoms of hypothyroidism.

Squeezing pimples in a clumsy fashion makes them worse because trauma crushes droplets of lipid throughout the inflamed region and each particle of lipid, liquid or solid, superficially or deeply situated, does its share of provoking irritation. Deeply seated inflammatory lesions are lipid filled granulomas as examination of their greasy, sanguinolent contents reveals. To incise such lesions does no good for only a fraction of the matter drains out. Roentgen therapy does no good for roentgen energy merely liquefies the contents by necrotizing phagocytes, and it frees the oil and enables it to irritate the more (the "explosive" effect of roentgen therapy on deep acne). If one

simply leaves the lesion alone it eventually resorbs for the oil eventually is either phagocytized and carried away or is encapsulated within epithelium to become a sebaceous cyst.

Paraffin acne<sup>5</sup> is the result of foreign body reaction to matter forced into follicles and glands. Some substances, such as chlornaphthalene, are much more irritating than others. Hass<sup>10</sup> demonstrated, in his studies of the results of injecting esters of fatty acids of olive oil and of cod liver oil, that nonsaponifiable fractions are severely irritating and that intensity of inflammatory response increases with increase in average unsaturation of the lipid fraction.

The influence of thyroid extract on lipemia has received considerable study by Hurxthal<sup>12</sup> who showed that studies of blood lipid give a sounder estimate of thyroid function than determinations of the basal metabolic rate. Turner and Steiner<sup>13</sup> carefully followed the blood lipid levels of a number of individuals and demonstrated that thyroid extract regularly diminishes the cholesterol level markedly, while iodide increases it only a little if at all, thus affecting only some of the individuals.

Investigations of cholesteremia by Strickler and Adams,<sup>14</sup> in which were reported 217 determinations of cholesterol in 103 patients with acne vulgaris, were interpreted as indicating that there is no correlation between lipemia and the disease. But cholesteremia may be normal and yet the fat metabolism may be quite deranged.<sup>15</sup> Furthermore, acne patients' free fatty acids, carotinemia and total blood lipoids have not as yet been investigated. They should be. I predict that when lipid tolerance curves are drawn for acne patients (analogous to glucose tolerance curves for diabetics) and when all the lipid fractions are investigated (not merely the cholesterol fraction), lipid metabolism will be found to be deranged. I rely as securely on the fact that a patient's acne erupts the day after he eats ice cream as on the results of chemical analysis of the blood. Oil that has been swallowed provokes inflammation typical of phagocytosis of lipid in the skin of the face; it gets there somehow. Take the oil from the food and the inflammatory incidents become fewer; but cystic lipid deposits become inflamed from time to time. Then, take all the oil from the deposits by means of a bistoury and gentle technic and, if the patient abides by the diet, no inflammatory incidents occur. Give thyroid extract to help burn oil if altering the diet is insufficient to bring intake within tolerated limits, just as one may need to prescribe insulin as well as diet to control diabetes; then the patient gets well and stays well; that is, 90 per cent of the patients do. In the remaining 10 per cent, of the xanthomatoid class, a low carotenoid diet is needed in addition to the low fat diet as for the ordinary case.

The adolescent is especially vulnerable to acne because he is one who customarily has pushed into him, by well intentioned parents who believe the

advertising, quantities of milk and cream far beyond his ability to metabolize their oily constituents. Acne is worse in the summertime because of (1) gross increase in oil intake because of the popularity of ice cream; (2) increase in seborrhea because of the direct effect of warmth and sweating, and (3) liquefaction of comedo oil making it mechanically easier for sebaceous lipoid to reach the mesodermal tissues capable of reacting to it with inflammation.

Rarity of acne in avitaminosis A<sup>8</sup> occurs because (1) avitaminosis A is likely to occur only in persons on extremely low fat diets and (2) keratinization of epithelium prevents the conjunction of sebum and mesoderm which is the *sine qua non* of an inflammatory lesion, while hyperkeratosis affects the epithelium of the sebaceous gland itself so as to diminish seborrhea.

Sulfur in lotions is useful as an astringent giving the same kind of local symptomatic relief that roentgen ray does. There is some connection<sup>16</sup> between sulfur and the metabolism of vitamin B complex which may or may not be pertinent. Sulfur lotions are not necessary in treating acne; my cases do as well without them as with them.

Roentgen therapy, short of necrotization, cannot remove a depot of lipoid from the skin, particularly if the lipoid is in the form of an intracutaneous or subcutaneous cystic collection. Roentgen energy can destroy sebaceous glands but even this will not permanently prevent the oiliness of the epidermis if the general lipoid metabolism is not controlled. Faces showing roentgen ray atrophy are often seen to be seborrheic, and the collections of lipoid set insularly within the atrophic skin are capable of provoking foreign body inflammation from time to time. Roentgen therapy cannot permanently incapacitate the mesodermal tissues from reacting for phagocytes and histiocytes reappear eventually. Roentgen therapy should be used in acne only, in my opinion, after the lipoid metabolism has been controlled, some weeks after the patient has started dietary and other therapy. The use of roentgen therapy is often strikingly beneficial, and lastingly so, as long as the diet is followed. Roentgen therapy will not cure acne when no account is taken of the basic pathologic physiology of the disease for it treats the symptom, seborrhea, not the cause, which is defective lipoid metabolism. About one case in five, in my experience, needs roentgen therapy. After lipoid metabolism is set right, insofar as I can accomplish this by diet and thyroid extract, and after about two months of treatment, the patient may need some four biweekly doses of 150 r each. The results are usually satisfactory.

#### TREATMENT

The patient is instructed carefully to avoid traumatizing the face. Any nonmedicated soap will do in washing the face. It should be used gently with tepid water (not hot, which would melt the oil in the lesions), and sore lesions should be avoided

rather than massaged. No unguent of any kind may touch the face. Vaseline on the hair gets on the face. Powder (light and fluffy), rouge (not cream rouge) and lipstick are allowed.

Seborrheic dermatitis of the face, "dry skin," is simply the extension of dandruff of the scalp. It should be treated, so that the scaliness will not interfere with the secretion of sebum.

No local medication needs to be applied to the involved areas, not even the classic sulfur lotion. Local treatment of the comedones and pustules must be performed by the physician, the patient being prohibited from picking at his lesions. In fact the patient must be ordered not to touch the face at all. Stokes and Garner<sup>17</sup> indicated the importance of postural habits such as leaning the chin in the hand, in causing localized acne eruptions.

The purpose of local treatment, as performed by the physician, is to get rid of lipoid depots before they provoke inflammation or with as little trauma as possible after they have done so. Sebum surrounded by epithelium will remain unabsorbed indefinitely; and sluggish, inflammatory phagocytosis of sebum gets rid of it only slowly and constitutes the pustulation which one wishes to avoid. By skillful removal of comedones, scarring is minimized. Removal of comedones is important but it must be done gently without crushing particles of lipoid into surrounding tissues. The uninflamed comedo is often bulbous so that a tiny "episiotomy" (from the mouth of its follicle outward along the line on the skin of the geometric projection of its slanting axis) enables one to pop it out without applying undue pressure. The pustule containing a semidigested comedo must be slit open just widely and deeply enough to let out the contents. Compress the opened lesion by stretching it rather than by squeezing it.

#### LOW FAT DIET<sup>18</sup>

Do not eat the following fatty foods: milk, cream, ice cream, butter, butter substitutes, cheese, crisco and lard, shortened foods (pie crust, biscuits, crackers), fried foods (potato chips), pork, ham, bacon, sausage, chocolate, cocoa, nuts, peanut butter, cod liver oil, vitamin concentrates, soup, gravy, catfish, Spanish mackerel, smoked herring, shad, canned fish (salmon, tuna, sardines), mutton, goose, turkey, brains, yolk of egg, roe, oatmeal.

Eat the following nonfatty foods freely: bread and cakes made with little butter or lard, cereals, lean meat once a day (beef, sweet breads, kidney, chicken, bass, cod, flounder, haddock, perch, pike, snapper, brook trout, shrimp, frog legs, clams, oysters, lobster), all vegetables and fruits except as noted in low carotenoid diet for certain cases, sugar, preserves, jam, jelly, honey, molasses, candy made of sugar but not of butter, nuts or chocolate.

Iodized salt, pepper and spices are allowed. Alcohol is restricted greatly. Tobacco is allowed. Coffee,

tea, and Coca-Cola are restricted to two cupfuls a day of any one of them.

In the low carotenoid diet for cases mainly of the rosacea-like, xanthoma-like type, avoid carrot, orange (two a day allowed), pumpkin, squash, sweet potato, spinach, yellow corn, highly colored vegetables and fruits in general, catsup. Allowed are colorless and lightly colored vegetables and fruits, such as rice, beans, peas, pale corn, grapefruit, pears, peach, apple, banana.

Iodized salt should be used in cooking. Iodine is an essential food element in the absence of which trouble with the thyroid gland is inevitable. The diet must be followed strictly and continually. The diet is low in calcium and in pregnancy calcium must be provided. The diet is purposely low in vitamin A, but harmlessly for a period of four months in my experience.

Thyroid extract is indicated in all cases, given to tolerance without regard to the determination of basal metabolic rate or the chemistry of the blood. Not all, but most, patients tolerate at least a small dosage. It is especially needed if the patient (1) is depressed and melancholy; (2) wishes to sleep late in the mornings and is tired on arising, even when sleeping regularly eight or nine hours a night; (3) feels tired in the afternoon and feels generally overloaded by work that ought not be an overload; (4) is anemic, feels cold, is disproportionately uncomfortable in the winter, is constipated, gains weight too easily, is scant and irregular in menstrual flow. Coffee in excessive amounts often masks some of these symptoms of hypothyroidism. In chronically fatigued, thin, worried patients who fight their "tired feeling" and suffer insomnia in consequence, thyroid dosage improves sleep, in part rids them of their nervousness and helps them to gain in appetite and weight. The dose is regulated by the symptoms; I like tablets of desiccated whole gland substance, 2 grains being equivalent to the usual  $\frac{1}{2}$  grain tablet of extract. I give 2 grains of this each day with the evening meal and on occasion may give this dose twice a day, with breakfast and dinner. Sometimes more is needed. The dose must be estimated by clinical trial, giving just less than the amount which produces symptoms of excess. The dose must be adequate. After two weeks, the need may have been made up so that a smaller dose will maintain; sometimes my prescription is to take the tablets for two weeks, then diminish the dose by half. I have seen no ill effect which did not pass off in a few hours leaving no trace, beyond the memory of it. The same dose in a normal person causes a sense of tension and exhilaration, likely to be followed by a violent, ocular headache similar to headache following anger. Insomnia, tremor, palpitation and nervous exhilaration are also indications for diminishing or omitting the dosage. One should discourage free sweating for to sweat is to secrete also an increased quantity of sebum.

Adequate sleep is desirable for chronic fatigue is certainly a harmful element. Often the fatigue which is chronic and scarcely relieved by sleep responds excellently to small doses of thyroid extract.

Erotic preoccupation is to be avoided, as Cleveland<sup>10</sup> recommended. This is a difficult prescription to put across but it is probably sound advice. I see acne vulgaris disappear after marriages and see it reappear, particularly along with neurotic excoriation, after divorces. On rare occasions I have prescribed prolonged hot douches for women under tension, and they have been helped.

#### RESULTS OF TREATMENT

Objective improvement is visible in a week, is well defined in a month and is excellent within six months. Improvement in symptoms such as mental depression and fatigability occurs in a week and is striking in most patients. A weight loss of from five to ten pounds may be expected in the first month, especially in milk drinkers. It is counteracted by eating more of the allowed foods. Weight loss is eventually regained and is no cause for worry. Appetite is greatly increased; the low fat diet does not "stick to the ribs." Some three to six months are required for cure. The diet is tentatively broken after a few months when the skin has become normal, enriching it particularly in vitamin A. The patient thereafter determines by experiment what his lipid tolerance is.

#### COMMENT

In testing this method of treatment, I trust that, in cases of apparent failure, one will seek for error in the administration of it or in the way the patient follows it before condemning the approach as a false one. Some cases which were not relieved when I began applying the method in 1937 were relieved later when I learned how to keep the patient on a truly low fat diet, and again when I excluded carotenoids in some cases. Actual cooperation, not wishful or verbal cooperation, is requisite.

#### SUMMARY

Acne vulgaris is a metabolic disease. It depends on imbalance between the dietary intake of lipoids and the patient's capacity for metabolizing them.

Lipoid deposits in comedones, cysts and acneform lesions must for the most part be removed mechanically for allowing them to remain allows them to provoke inflammatory reactions. In rosacea-like cases this cannot be done but the low carotenoid diet is followed by spontaneous resorption.

Acne vulgaris is, histologically, foreign body reaction to lipid; this inflammation is not bacterial inflammation.

Milk and milk products, being particularly rich in fat, are the commonest harmful ingredients of the diets of patients with acne; their baneful effect has nothing to do with allergy.

The details of a practical and successful method of treating acne vulgaris are described and explained.

1308 Bryant Building.

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A rubber sponge powder puff was finally found to be the cause of an intense dermatitis (skin inflammation) after tests of all the rest of the patient's cosmetic preparations had given negative results, Lester Hollander, M.D., Pittsburgh, reports in *The Journal of the American Medical Association* for December 28. This is the first such case to be reported in medical literature, he says.

The patient was instructed to stop the use of her cosmetics, soap, handkerchiefs and cleansing tissues for two weeks. At the end of that time her face was practically clear, but patch tests for these substances were negative. Later, in obtaining samples for additional patch tests, Dr. Hollander learned that she had bought a rubber sponge powder puff shortly before the original onset of the eruption, and that she used the puff only when away from her home. The outline of the eruption was confined to the area of its use.

## DISEASES OF THE GASTROINTESTINAL TRACT IN THE AGED

JONAS C. KOPELOWITZ, M.D.

LOS ANGELES, CALIF.

In discussing geriatrics, the branch of medicine dealing with old age, one must recognize that senility is a physiological entity like childhood and that diseases in senility are pathological conditions in normally degenerating organs or tissues. The aged can acquire almost any disease. More study is needed on physiology and pathology of old age.

Warthin,<sup>1</sup> in his book "Old Age," divides the life cycle into evolution, maturity and involution. Anatomic senile degenerations occur in every organ and tissue of the body. Atrophy is due chiefly to vascular changes. Due to hardening and thickening of blood vessels with lessening of elasticity and diminution of caliber, the amount of blood carried to terminal vessels insufficiently nourishes the tissues and organs supplied. In the hollow organs there is atrophy of the muscle fibers with consequent dilatation of the organ. There is atrophy of the glands of the stomach and intestine. The tissue cells of liver, pancreas and spleen show atrophy and there is proliferation of connective tissue constricting the organs.

Thewlis<sup>2</sup> states: "The phase of life at which geriatrics applies does not begin at any special time. Persons of 30 may present senile changes that should not occur until 70 or later."

There has been a spirit of indifference in attacking problems of old age. E. V. Cowdry,<sup>3</sup> professor of cytology of Washington University, published a wonderful book last year on "Problems of Ageing," written with twenty-five collaborators including Edgar Allen, Lewellys Barker, W. B. Cannon, A. J. Carlson, John Dewey, Louis Dublin, A. C. Ivy, and others. In the 16th, 17th and 18th centuries the average ages at death were 21, 26 and 36 respectively. In the United States in 1900 the average age at death was 49; in 1910 it rose to 51, and in 1920 to 56.4. Now it is 59.3 for males and 62.8 for females. The span of life has been increased markedly by the splendid drop in infant mortality, control of infectious and contagious diseases, public health measures and better standards of living, but it does not reflect increased years at the "twilight of life."

All are familiar with the ideas of Metchnikoff, the eminent Russian biologist. He was interested in the old natives of the Balkan States. He thought that goat's milk soured in containers made of animal skins was responsible for their long life. This together with the fad of changing the intestinal tract flora by implanting *Bacillus acidophilus* (Bulgarian bacillus) thus trying to minimize auto-intoxication, and a cycle started by Sir Arbuthnot Lane of removal of five feet of intestinal tract to lessen the

Read before Section of Internal Medicine, Los Angeles County Medical Society, March 6, 1940.

time that the fecal residue remained has fallen by the wayside. There was some justification in the latter in that some birds with short intestinal tracts live an amazing number of years.

The aged want youth; they are looking for the "fountain of youth" as the work on the gonads, the work of Voronoff and Steinach, the face lifting, the beauty parlor business with bobbed and dyed hair in the aged and their use of youthful clothes and colors witness. Efforts should be made to help the aged and keep them active, "in the harness," as most of them would rather "wear out" than "rust out."

#### GASTROINTESTINAL DISEASES

Gastrointestinal symptoms are common in the aged but organic disease of the gastrointestinal tract is relatively uncommon.

Rivers<sup>4</sup> of the Mayo Clinic states that "dyspepsia" or "indigestion" is among the complaints of half the patients between 30 and 60. Disorders of organs outside the digestive tract (cardiac, renal, arthritic, hematologic) cause functional disturbances in the alimentary tract either through changes in the composition of the blood or reflexly through the nervous system.

Rivers shows that in males aged 40 and over who complained primarily of "dyspepsia," peptic ulcer ranked first as a cause and in women gallbladder disease was first. In 17 per cent of the males and 5.8 per cent of the females, cancer of the digestive organs (chiefly stomach) was a cause of

the "dyspepsia." In 49 per cent of the men and 38 per cent of the women whose primary complaint was "dyspepsia," there was some disorder of the digestive organs that demanded careful diagnosis and early medical or surgical attention.

These observations show that physicians have the responsibility of educating laymen concerning the dangers of using therapeutic nostrums for dyspeptic symptoms, the dangers of cults and isms for their illness, and the responsibility of making an accurate diagnosis of the cause of the "dyspepsia," particularly in people over 40.

Lewellys Barker<sup>5</sup> and his associates studied 300 new clinic patients over 60 years of age. In this group there were 240 between 60 and 70. In this 240 the chief symptoms in order of frequency suggested disease of:

1. Nervous system.
2. Digestive system.

Abdominal pain	22
"Poor digestion"	16
Constipation	16
"Gas"	15
Nausea (vomiting)	12
Anorexia	7
Diarrhea	5
Dysphagia	1

3. Circulatory system.
4. Locomotor apparatus.

In these 240 cases the diagnosis in order of frequency was:

1. Circulatory apparatus.
2. Nervous system.
3. Locomotor system.
4. Digestive system.
  - 3 cases of gallbladder disease.
  - 2 cases of ulcer of pylorus.
  - 2 cases of duodenal ulcer.
  - 11 cases of tumor, chiefly cancer (colon, liver, esophagus, pylorus, prostate, breast).
  - Oral sepsis was common.
  - Few cases of achylia, hyperacidity, spastic colon, inguinal hernia, severe hemorrhoids.
  - 5 cases of diabetes mellitus.
  - 5 cases of syphilis.
  - Several cases of obesity.
  - Several underweight.
  - Several had faulty hygiene (diet).

Recently there has been a great deal of attention given the role of the gastrointestinal tract in the production of cardiac symptoms, chiefly the anginal syndrome. There has been the hypothesis that "gas traps" and gaseous pressure in the stomach and esophagus set up spontaneous contractions of the esophagus and stomach and these through the vagus arc produce angina.

The Jacksons of Cincinnati electrically stimulated the esophagus of dogs and produced irregularities in cardiac action. Others have reproduced angina by using inflated rubber balloons to dilate the esophagus and stomach and show changes in the electrocardiogram.

The eructation of gas often relieves anginal attacks. William J. Kerr showed the value of an



Fig. 1. A large diaphragmatic hernia simulating either heart disturbance or gallbladder disease.

elastic abdominal support. The explanation of its action is not definitely known but it probably is a question of improving diaphragmatic movements and presumably acting through more adequate filling of heart and coronary vessels.

Also there are patients with angina who have cardiospasm or diaphragmatic hernia. (Figs. 1, 2, 3.)

#### DEATHS FROM DIGESTIVE TRACT DISEASE

Death in the aged hardly ever is due to senile wearing out of organs of the digestive tract. In people over 45, disease of the gastrointestinal tract causes about 7 per cent of deaths. This is as frequent as death from chronic nephritis, a little more frequent than death from cerebral vascular accidents and about one third as frequent as deaths from heart disease. The relatively high incidence of death from digestive disease is due to cancer. Hepatic disease (cirrhosis, calculi) is next in importance in death from digestive tract disease, then ulcer of stomach and duodenum and intestinal obstruction and diverticulitis.

#### DIGESTIVE DISTURBANCES DUE TO PHYSIOLOGIC SENILITY

Jacob Meyer<sup>6</sup> and associates at Michael Reese have shown a decrease of saliva and salivary ptyalin in the aged; in some a subnormal amount and in many a normal amount of pancreatic amylase; a decrease in pepsin; a decrease in trypsin, and normal lipase. There is need for more study of this. In regard to achlorhydria, there is a discussion as to whether a gastritis or an inherited

predisposition is the underlying factor. Ivy<sup>7</sup> reports that 35 per cent of persons above the age of 60 secrete no acid when eating and in 28 per cent the stomach shows no response to histamine stimulation. Irritating foods, alcohol and infection may produce chronic gastritis which may in turn produce achlorhydria or the infection as a secondary factor may produce gastritis. The tendency to general diminution of enzymes and HCl in the aged might indicate a physiologic involution and cellular atrophy. Achlorhydria is compatible with good health but it may predispose to anemia, pernicious anemia, inadequate calcification of bone, enteritis and diarrhea.

In the expression of gastric contents in the aged, some fear damage because of arteriosclerotic and cardiovascular changes. It is a perfectly harmless process by cocainizing the nostril and using a Levine nasal tube. It is surprising how they stand even gastroscopy.

#### DIET IN THE AGED

It is a good policy to let old people follow their natural selection in foods. With few exceptions they select the quantity and quality of food which satisfies their needs and taste. It is unwarranted to make severe restrictions in diet, especially protein, and not wise to change their life long dietary



Fig. 2. Small diaphragmatic hernia which simulated coronary artery disease.



Fig. 3. Same patient as figure 2 in Trendelenburg position.

habits. They have their phobias about food and, especially in California, they become food fad-dists. They know what they can or cannot handle, possibly what they are allergic to, and one had better listen instead of directing a change.

The old do less work, take less exercise and have a lowered basal metabolism. They need a well balanced diet of easily digested food, a little less than an active person, and need suitable vitamins. A little more salt in hot weather promotes a sense of stimulation. Moderation in eating, with the avoidance of large meals, is good practice. Protein for wear and tear should not be greatly restricted. Small doses of alcohol have no contraindication. In some patients six small meals a day are better than three large ones. The patients who are edentulous or in whom the chewing surface is inadequate need a nonroughage diet. When the aged complain of "gas," a nonroughage diet with avoidance of condiments, of rich, salty and fried foods helps.

Vitamin B deficiencies are common. Anorexia, some constipation, certain spinal symptoms, neuritis, nutritional edema and beriberi heart do improve on Vitamin B. For achlorhydria give HCl, either the dilute HCl in good size dosage or Glutan or acidulin. There is no diet known that will prevent atheroma. The researches of Aschoff and others on cholesterol metabolism have not helped to formulate any dietary prophylaxis.

More study is needed on the subject of appetite. Carlson<sup>8</sup> quotes Sternberg as saying, "The appetite is in some way associated with the tonus of the muscles of mastication and deglutition and the absence of appetite in nausea is due to atony of these muscles." Carlson<sup>8</sup> regards "A certain sensation complex from the viscera and a normal state of correlation is a necessary background for appetite. Given this background, the essential element in appetite is the memory process of past experiences (sight, smell and taste) with palatable food." One therefore can explain anorexia in the aged by the disturbances in sight, changes in taste buds and in sense of smell. Diminution in the secretions and the changes in the hunger contractions probably play a role. Vitamin B is apparently quite effective in stimulating appetite and it acts probably by decreasing emptying time of the stomach and promoting carbohydrate metabolism. The use of bitters, alcohol and HCl to stimulate appetite is well known.

There should be particular attention paid to the mouth and teeth of the aged. Proper mastication is important to the enjoyment of food. Physician and dentist should cooperate in correcting pyorrhea, abscessed teeth, shrunken gums and ill-fitting dentures. A note of warning should be sounded about wholesale radical dental extractions (coronary occlusion, streptococcus viridans). When many extractions are necessary, a couple at a time should be done.

Many old people stress the appearance of their tongue. They believe it is an index of bowel activity or mirrors their condition. There is no ade-

quate explanation of coated tongue. A dry tongue may indicate lack of fluids, diminished salivary secretion or may indicate an atrophic glossitis. A glossitis may be part of an anemia in the aged, or achlorhydria, vitamin deficiencies, pernicious anemia or Plummer-Vinson syndrome. Many patients are seen who have "burning tongue," a psychogenic sore tongue. They fear cancer.

#### DISEASES OF DIGESTIVE ORGANS IN OLD AGE

*Gastritis.*—This is a symptom complex evidenced by epigastric distress, sore mouth, sore tongue, belching and anorexia. It may be related to cardiac, renal or blood disease (anemia), to syphilis, cancer, or inflammation, or be part of a physiologic senile involution. Differential diagnoses from peptic ulcer and cancer of the stomach is not always easy. Besides the usual diagnostic procedures, gastroscopy is being used more frequently.

*Carcinoma.*—One should suspect cancer in every old person who has digestive discomfort. In the statistics of Eusterman and Balfour,<sup>9</sup> it is shown that the incidence of cancer of the stomach in people between 60 and 70 is almost equal to the middle age group. From 10 per cent to 20 per cent of gastric cancer arise from previous ulcer. There is a great variation in statistics on this point. Gastroscopy, and in some cases peritoneoscopy, can aid in diagnosis.

*Peptic Ulcer.*—It is not unusual to find at autopsy an overlooked primary chronic peptic ulcer, or ulcers secondary to diseases of the liver, gallbladder, cardiorenal disease or prostatic disease. The syndrome of peptic ulcer may be masked or misinterpreted as reflex symptoms due to cardiac or renal lesions and the gastric lesion overlooked. Old people may have peptic ulcer associated with coronary sclerosis and thrombosis. On the other hand, they often have gastric distress after eating secondary to the cardiac picture. I make a plea for a careful history and careful study. Hemorrhage and perforation are frequent in ulcers in the aged and cause a higher mortality than in the younger group. Severe hemorrhage occurs because of arteriosclerotic blood vessels and may call for immediate surgery. The lowered resistance of the aged adds to the danger from hemorrhage and perforation.

*Appendicitis.*—The appendix tends to obliterate with age. Appendicitis occurs in the aged but is often unrecognized. One thinks of mesenteric occlusion, intestinal obstruction and forgets the appendix. It is serious because in the aged the tendency to perforation and gangrene is great. The high mortality seen in the aged is due to atrophy of the protective lymphoid tissue and naturally lowered resistance.

*Gallbladder Disease.*—In the aged, gallbladder disease like peptic ulcer either may mask a cardiac condition, be associated with it or aggravate cardiac symptoms. At times it is difficult to determine which is the more important.

Surgery of gallbladder conditions in the aged (and really all surgery in the aged) should be conservative. Just to remove a gallbladder for a solitary silent stone or to cure a cardiac condition, a paroxysmal tachycardia or extrasystole, is unwarranted. If there is an empyema of the gallbladder and it is dangerous to use expectant treatment or obstructive jaundice is not being relieved, surgery is indicated.

Surgery in general in the aged is safe, depending on better diagnosis, better preoperative care as vitamin K and bile salts in jaundice, preoperative transfusions, better anesthesia as spinal, CO<sub>2</sub> post-operatively, Wangenstein's deflation of stomach and intestines, and getting the patient out of bed earlier.

*Liver Diseases.*—I shall be brief as diseases of the liver is a big subject. In considering cirrhosis, remember that hematemesis and melena may be due to a rupture of an esophageal varix. These may be shown by careful roentgen ray studies of the esophagus using a thin barium with the patient in prone position.

*Diverticula and Diverticulitis.*—Thinning of colonic musculature and elastic tissue with advanced years causes an increased incidence of diverticula. Diverticula are most common in the descending colon and sigmoid but may occur in any part of the colon. They may contain fecoliths. Simple diverticulum is diagnosed by roentgen ray. It produces no symptoms.

An acute inflammatory reaction in a diverticulum is known as a diverticulitis. It may lead to supuration, local perforation and peritonitis. As it is most often on the left side, it resembles a left side appendicitis. Some cases resolve and some cases need surgery.

*Constipation.*—There is no evidence that the capacity of the colon for absorption and for the secretion of mucus is decreased in the aged. There is no evidence that motility is impaired. There is no reason to believe that either constipation or hemorrhoids are more common in the aged. Constipation is usually a life long habit or a long standing condition. Recent constipation or constipation alternating with diarrhea may indicate neoplastic disease of the colon. Constipation may be real or imaginary. The aged show an anxiety over their bowels; if they do not have a bowel movement daily they are sick. The loss of tone in the abdominal muscles and sedentary habits in old people are recognized factors in possibly delaying bowel movements. Diminution in proteolytic enzymes may be a factor.

Rectal constipation or rectal or fecal impaction does occur in the aged. This is because the rectal mucosa becomes flaccid and loses its muscular tonicity. I wish to stress the importance of rectal examination and proctoscopy. In rectal impaction, cathartics are poor therapy. One tries enemas, oil retention enemas, glycerine suppositories and

breaking up the fecal masses with the finger. Old people should not strain at stool for obvious reasons. Giving purgatives is poor therapy. There is no harm in the milder vegetable cathartics or an occasional saline laxative. The substitution of pureed vegetables, or the addition of a vegetable mucilage or gum (Metamucil, Saraka, Mucara) is sometimes effective. Mineral oil, petrolagar and agarol are used. I often have them use a normal saline enema.

*Diarrhea.*—Diarrhea occurs just as in other age groups. At times it is caused by indiscretion in diet. Recent diarrhea may mean cancer of the bowel or rectum. Achylia or pancreatic insufficiency may be factors in diarrhea.

A few other conditions are visceroptosis, cancer of mouth, tongue, esophagus or colon, esophageal diverticula, epigastric hernia, incarcerated or strangulated hernia and intestinal obstruction. The latter may be simulated by uremia or may be caused by a full bladder. The Miller-Abbott tube is useful in relieving some high obstructions.

#### SUMMARY AND CONCLUSIONS

1. More attention should be paid to diseases of the digestive tract in old age. More work is needed on the relation of senile inanition with decrease of digestive secretion; also on the absorption from the intestine in the aged. I stress the importance of careful history and examination including rectal examination.

2. Make no radical changes in the diet of old persons.

3. There should be evaluation of cardiac and gastrointestinal symptomatology.

4. A plea is made for conservative surgery in the aged.

5. Gastrointestinal symptoms occur more frequently than any other symptom in patients over 40. This is because the alimentary tract is so readily influenced by mental states and disease elsewhere in the body, and because many of the symptoms of disturbances in the gastrointestinal tract are functional in nature. This probably prompted Josh Billings to write: "I have finally kum tu the konclusion that a good reliable sett of bowels is worth more tu man than enny quantity of brains."

1908 Wilshire Boulevard.

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FEBRUARY, 1941

## EDITORIALS

### THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

### ST. LOUIS CLINICAL CONFERENCE MARCH 10 TO 13

The Annual Clinical Conference of the St. Louis Clinics will be held March 10 to 13 at the Coronado Hotel, St. Louis. Registration will be held Monday morning, March 10, and the scientific session will begin at 1:00 p. m.

Clinics will be conducted by St. Louis physicians and guests. Special subjects will be presented by Reserve Officers of the Army and Navy.

Seven distinguished guests who will participate in the program are Dr. Fred L. Adair, Chicago, Professor of Obstetrics and Gynecology, University of Chicago School of Medicine; Dr. W. Leslie Bradford, Rochester, New York, Associate Professor of Pediatrics, University of Rochester School of Medicine and Dentistry; Dr. Charles A. Doan, Columbus, Ohio, Professor of Medicine, Ohio State University College of Medicine; Dr. Willis D. Gatch, Indianapolis, Indiana, Dean and Professor of Surgery, Indiana University School of Medicine; Dr. John J. Shea, Memphis, member, American Laryngological, Rhinological and Otolological Society; Dr. Arthur Steindler, Iowa City, Professor of Orthopedic Surgery, State University of Iowa College of Medicine, and Dr. Fred D. Weidman, Philadelphia, Research Professor of Dermatology, University of Pennsylvania School of Medicine, and Professor of Dermatology, Graduate School of Medicine, University of Pennsylvania.

### AMERICAN MEDICAL ASSOCIATION CLAIMS THIS IS NOT NATION OF "PHYSICAL WEAKLINGS"

Based on an analysis of the first official report on the results of physical examinations by Selective Service Boards, the *Journal of the American Medical Association* in an editorial on January 4 declared that this was not a nation of "physical weaklings."

"The first official statistics on the results of examination of young men coming before the Selective Service Boards are now available in a statement sent to the Director of Selective Service for New York City by Col. Samuel J. Kopetzky, chief of the medical division," *The Journal* states. "The total number of registrants examined by 120 local boards was 1,643. Of these 1,213 were accepted for general military service and 430 were rejected or marked 'fit for limited duty only.' Among the causes for rejection, 26 were for underweight, 11 for overweight, 2 for deficient height; defective vision was the primary cause of 74 rejections, diseases of the heart for 66, infantile paralysis for 28. Whereas only 6 men were rejected because of syphilis, there were 90 men who gave a positive reaction to the Wassermann test, which caused these men to be deferred until they could be reexamined. Again the leading cause of rejection was teeth—88 men

were rejected because of insufficient teeth as the main cause of rejection and 20 additional had insufficient teeth as a secondary cause.

"Such figures as those here cited have been widely heralded in many places as the basis for a campaign in behalf of some new method of prevention and treatment of disease in the United States. It has been urged that we are a nation of 'physical weaklings' and that some sort of national health program is immediately necessary to improve our physical health. Actually, however, this sample of those rejected does not show any specific deterioration in the population. By comparison with previous records, it indicates that the general health of our nation is good. The standards of evaluation today are far more rigid than those which were utilized in 1917. The roentgen ray (x-ray) for determining the presence or absence of diseases of the lung and the modern technics for examining various portions of the body, laboratory methods for the detection of changes in the blood, the Wassermann test and similar methods of study were not used in examination of recruits in World War I.

"In a bulletin just issued by the Metropolitan Life Insurance Company it is pointed out that 'America's youth today is more fit to serve the country than any previous generation, including the youth of the World War.' A large proportion of the rejections, it is indicated, are for ailments that are minor and often remedial and, in any event, not a bar to rigorous activity in civilian life. The improvement in the physical health of our nation is shown, of course, by lower sickness and death rates affecting those in the draft ages. In 1917-1918 about 10 per cent of the draftees were rejected because of manifest tuberculosis. The mortality from that disease has declined 75 per cent in the last quarter century among men of draft ages. Among men of the ages of 21 to 35 the reduction in heart disease mortality among those holding policies in this insurance company was 40 per cent for white men and 60 per cent for the Negroes. Our knowledge of diet, our greatly increased understanding of many diseases of the glands, the improvement in child health that has taken place in the past twenty years—all this evidence indicates that from the point of view of physical fitness we are a far better nation now than we were in 1917.

"The evidence here developed should not lead us, however, to the belief that we have attained an optimum in physical fitness. The twenty-eight cases of rejection because of crippling injuries resulting from infantile paralysis are a reminder of the devastation wrought among children by this disease in the New York area in 1916. Those children are now in the draft ages. An estimate by Dr. Paul A. Neal of the National Institute of Health indicates that 60 per cent of all disabilities will be due to defects of eye and ear, mechanical defects and conditions of the heart and kidneys among the 6,000,000 men who will be examined. Many of

these constitute conditions which are susceptible of rehabilitation or improvement with proper medical advice, enabling these men to be fit for limited service if not for complete military service. Approximately 140,000 men will be rejected because of tuberculosis. Not every one of them can be restored to a useful life in civilian affairs, but proper treatment and proper education may do much to lessen the chance that these men may become the foci of dissemination of this disease.

"The problem of rehabilitating the men who are found to be physically or mentally defective by the Selective Service Boards is one which is being given serious consideration by many different agencies. Certainly every man who is found defective should be informed of the reasons for his rejection or deferment so that he may be given an opportunity to do the utmost on his own behalf and to utilize to the utmost the services available in his own community for rehabilitation.

"In a recent address, Mr. Paul V. McNutt, coordinator of all health and welfare activities affecting the national defense, said, 'The task of absorbing the impact of these developments is essentially one which the local community must face squarely. . . . Responsibility for working out these essentially local problems is one which can be met primarily through the efforts of local citizens, both those who are in professional activities and those who are operating in a voluntary capacity. This is work which will require careful planning, close coordination, intelligent leadership and unity.' The results of the examinations made by the Selective Service Boards and the induction boards are a challenge to the medical profession, to the social scientists, the physical educators, the public health officials and all of those concerned in the United States with the physical improvement of our population. In a recent address by Pres. William J. Hutchins of Berea College, published in the current issue of *Hygeia*, this challenge was sharply stated: 'The defense of our nation cannot be entrusted to a race of adult morons, whose children are spawned into the world, to die like flies. The nation's defense cannot be entrusted to men, such as fill the venereal wards of our hospitals, such as filled the venereal sections of our army camps in the Great War. No more can our nation's defense be entrusted to men whose gangs surround our saloons and pool rooms, whose sole evidence of will power is the tenacity with which their teeth hold their cigarettes.'

"Scientific honesty and truth demand that we look at the problem of the people's health and evaluate the available figures clearly and justly. Again and again *The Journal* has pointed out that from the point of view of the national health and of physical fitness the American people can place their record well up beside that of any other nation in the world. Those who argue that this record is due primarily to the superior living conditions which have long prevailed in the United States

cannot discount the achievements of modern medicine or the part played by the public health movement and medical organizations in this country. We are not a nation of 'physical weaklings.' Among the 16,000,000 men registered under the Selective Service Act, there can be found without too intensive a combing a sufficient number for training not only this year but in the years to come. However, the greatest asset of any nation is the health of its citizens. The detection of correctable deformities and disabilities is a problem for the medical profession. The rehabilitation of those who can be benefited is again a problem which rests primarily on the medical profession. The assumption of proper responsibilities by local, county, state and national agencies, each according to the share that it must bear in our democratic system of government, is equally desirable."

#### FATAL ACCIDENTS IN 1940

Fatal accidents in 1940, according to present estimated statistics, will exceed those in 1939 by about 5,500. The number estimated for 1940 is 98,000.\* While each major class of accident contributed to the increase, the number of people exposed to accident in each class was increased. Automobile travel increased, the national defense program brought more people into industry thus increasing the number exposed to occupational hazards, economic improvement widened the scope of activities of many and airplane travel increased. Also, catastrophes took more lives in 1940 than in 1939.

Deaths resulting from automobile accidents are estimated at 34,500, an increase of 2,000 over those in 1938 or 1939 but 5,000 fewer than in 1937.

Industrial accidents in which many lives were lost include the mine explosion in West Virginia with ninety-one fatalities; two mining catastrophes in Ohio with seventy-two and thirty-one lives lost and one in Pennsylvania with sixty-three lives lost. In the nine preceding years, 1931 through 1939, there were but four coal mine catastrophes which caused thirty-one or more deaths.

Other accidents in which twenty-five or more persons were killed were an explosion at a powder mill in New Jersey with fifty-one fatalities; passenger train wrecks, one in Ohio with forty-three lives lost and one in New York with thirty-one fatalities, and a collision between a truck and a train in Texas with twenty-nine fatalities.

Three airplane accidents, the first one in August, caused twenty-five, ten and nine deaths. The accident in August ended a record of seventeen months in which commercial planes had flown one and a third billion passenger miles without a fatal injury to passengers or crew.

A hurricane caused the deaths of thirty-five persons in Georgia and South Carolina and a severe

storm along the Great Lakes caused a number of deaths.

The greatest catastrophe in number of lives lost during 1940 was the dance hall fire in Mississippi in which 210 lives were lost.

#### NEWS NOTES

Dr. A. N. Lemoine, Kansas City, was a guest of the Colorado Ophthalmological Society at Denver on December 21 and spoke on "Allergies in Ophthalmology."

The Trudeau Club of St. Louis met January 9 at the Barnes Hospital Medical Amphitheatre. Appearing on the program were Drs. Evarts A. Graham, Nathan A. Womack, Edward M. Kent and T. H. Burford, St. Louis.

Dr. E. Lee Dorsett, St. Louis, was a guest of the Kansas City Obstetrical and Gynecological Society at Kansas City on January 9 and presented a paper on "Reoperation: Postoperative Complications Requiring Operation."

The St. Louis Gynecological Society will be host to the Chicago Gynecological Society and the Kansas City Obstetrical and Gynecological Society in St. Louis on February 15. Clinical meetings will be held at the Firmin Desloge Hospital in the morning and at the St. Louis Maternity Hospital in the afternoon. A dinner meeting will be held at the University Club at which papers will be presented by a Kansas City visitor and by a Chicago visitor.

Dr. E. A. Doisy, St. Louis, Director of the Biochemistry Department of the School of Medicine of St. Louis University, has been named a member of the National Advisory Cancer Council. This Council was created by an Act of Congress to advise the Surgeon General of the United States Public Health Service regarding grants-in-aid and other matters dealing with the government's program for cancer research.

Parke, Davis & Company, Detroit, Michigan, is celebrating its diamond anniversary in 1941. The company began as a small drugstore in Detroit in 1866. The offices and research and manufacturing laboratories now occupy six blocks and a 700 acre farm at Rochester, Michigan, is used for the production of antitoxin, serums and vaccines and the cultivation of medicinal plants. Branch offices and depots are maintained in cities throughout the country, including Kansas City and St. Louis. Foreign branches are maintained in England, Australia, Canada, India, Argentina, Brazil and Mexico. Parke, Davis & Company has introduced many important medicinal products and their research activities cover the major phases of medical treatment.

\*Statistical Bulletin, Metropolitan Life Insurance Company, 21:4 (December) 1940.

The Committee on Scientific Exhibits for the Annual Session of the Association, which will be held in St. Louis, April 28, 29 and 30, 1941, will be glad to receive requests for space for scientific exhibits, either by individuals or organizations. Applications should give an outline of the subject matter to be covered, figures on floor and wall space necessary to display the exhibit properly and whether motion pictures will be used. Applications should be addressed to Dr. Ralph R. Coffey, Chairman, 1324 Professional Building, Kansas City.

The fifth annual Social Hygiene Day, sponsored by the American Social Hygiene Association, will be held on February 5. St. Louis, with the Missouri Social Hygiene Association as sponsors, will entertain one of four national regional conferences, the others to be held in Philadelphia, New Orleans and Los Angeles. Approximately 5,000 community meetings in all parts of the country will be held. Thirteen states will participate in the St. Louis regional conference. An all day session will be held at the Coronado Hotel beginning at 9:30 a. m. Principal subjects for discussion will be "How the Government Protects Soldiers, Sailors and Workers from Syphilis and Gonorrhea," "Syphilis and Wars" and "The Citizen's Part in Protecting Soldiers, Sailors and Industrial Workers from Syphilis and Gonorrhea." St. Louis physicians serving on the St. Louis coordinating committee on Social Hygiene Day are Drs. Harriet S. Cory, chairman, Joseph C. Peden, Llewellyn Sale, Philip A. Shaffer and Richard S. Weiss.

The next examination for appointments as commissioned officers in the Medical Department of the Navy will be held at all larger naval hospitals and at the Naval Medical Center, Washington, D. C., May 12 to 15, according to announcement by Rear Admiral Ross T. McIntire, Surgeon General of the Navy. Applicants for appointment as Assistant Surgeon, effective approximately two months from date of examinations, may now request authorization to appear for examinations. Requests for such authorization should be made prior to April 21. Applicants for appointment as Assistant Surgeon are required to be citizens of the United States, between the ages of 21 and 31, graduates of class A medical schools and have had at least one year of intern training. Medical officers receive the same pay and allowances as other officers of the Navy in corresponding ranks and the equivalent amount of service. Information may be obtained from the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

The fifteenth annual meeting of the National Conference on Medical Service, formerly the Northwest Regional Conference, will be held at the Palmer House, Chicago, on Sunday, February 16, at 9:00 a. m. Five basic subjects will be pre-

sented in the form of symposia with time available for questions and answers. Three men who have been instrumental in development of different types of plans will discuss "Voluntary Group Medical Care Programs." A member of the American Medical Association Committee on Medical Preparedness and two medical officers in Selective Service will discuss "Medical Preparedness." Several speakers from various states following different plans of postgraduate study will speak on "Postgraduate Plans of State Medical Societies." A presentation on "Medical Legislative Problems" will include speakers on federal and state legislation. Special consideration will be given to "Medical Care for Social Security Clients" from both the legal and medical aspects. A short talk will be presented by Mr. C. H. Wantz, president of the Medical Exhibitors Association, on "The Annual Meeting from the Standpoint of the Exhibitor." Any physician is welcome to attend the meeting and can obtain a complete program and details by writing Dr. Harold M. Camp, Secretary, Monmouth, Illinois.

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies:

Abbott Laboratories

Capsules Quinidine Sulfate 0.2 Gm. (3 grains)  
Sodium Citrate 3% W/V Solution—Abbott

Drug Products Co., Inc.

Ampuls (Hyposols) Caffeine with Sodium Benzoate, N. F., 7½ grains, 2 cc.

Ampuls (Hyposols) of Camphor in Oil, N. F., 0.195 Gm. (3 grains), 1 cc.

Endo Products, Inc.

Tablets Aminophylline, 0.1 Gm. (1½ grains)

Ampule Solution Aminophylline 0.48 Gm., 2 cc.

Ampule Solution Aminophylline 0.24 Gm., 10 cc.

Ampoules of Physiological Solution of Sodium Chloride, 10 cc.

Ampoules of Physiological Solution of Sodium Chloride, 20 cc.

Ampoules of Physiological Solution of Sodium Chloride, 50 cc.

Ampoules Solution Sodium Morrhuate 5% with Benzyl Alcohol 2%, 2 cc.

Ampoules Solution Sodium Morrhuate 2% with Benzyl Alcohol 2%, 5 cc.

Solution Sodium Morrhuate 5% with Benzyl Alcohol 2%, 25 cc. Bottles

Lakeside Laboratories, Inc.

Ampules Phenobarbital Sodium, 0.13 Gm. (2 grains)

Mallinckrodt Chemical Works, Inc.

Quinidine Sulfate, U. S. P.

The Wm. S. Merrell Company

Ascorbic Acid Tablets—Merrell, 25 mg.

Ampul Solution Procaine Hydrochloride 1%, 1 cc.

- Ampul Solution Procaine Hydrochloride 1%, 10 cc.  
 Ampul Solution Procaine Hydrochloride 2%, 1 cc.  
 Ampul Solution Procaine Hydrochloride 2%, 10 cc.  
 National Drug Company  
 Tablets Ascorbic Acid, 25 mg.  
 Sharp & Dohme, Inc.  
 Sulfapyridine  
 Tablets Sulfapyridine, 0.5 Gm. (7.7 grains)  
 "Lyovac" Tetanus Antitoxin (Bovine)  
 Allergenic Extracts—Mulford (for treatment)  
 (Aniseed, All-spice, Anchovy, Butterfish, Cashew Nut, Castor Bean, Catfish, Chicory, Currant, Caraway Seed, Date, Gelatin (Cattle), Hazelnut, Hops, Horse-Radish, Lime, Mace, Pike, Pimento, Poppy Seed, Porgy, Quince, Sage, Sardine, Tapioca, Thyme, Weakfish, Whitefish, Feathers Mixed (Chicken, Duck & Goose), Pigeon Feathers, Rat Hair, Turkey Feathers)  
 The Smith-Dorsey Co.  
 Tablets Magnesium Trisilicate, 0.324 Gm. (5 grains)  
 The Upjohn Company  
 Tablets Ascorbic Acid, 15 mg.  
 Tablets Ascorbic Acid, 25 mg.  
 Tablets Ascorbic Acid, 50 mg.  
 Tablets Ascorbic Acid, 100 mg.  
 Tablets Nicotinic Acid, 20 mg.  
 Tablets Nicotinic Acid, 50 mg.  
 Tablets Nicotinic Acid, 100 mg.  
 Werner Drug & Chemical Co.  
 Eucatropine Hydrochloride

The following products have been accepted for inclusion in the List of Articles and Brands Accepted by the Council but not described in New and Nonofficial Remedies (1940, p. 560):

- Endo Products, Inc.  
 Ampoules Magnesium Sulfate 10%, 5 cc.  
 Ampoules Magnesium Sulfate, 10%, 20 cc.  
 Sharp & Dohme, Inc.  
 Allergenic Extracts for Diagnosis—Mulford

## DEATHS

Shanks, Archie L., M.D., Hannibal, graduate of Washington University School of Medicine, 1901; honor member of the Marion-Ralls County Medical Society; aged 65; died October 23, 1940.

Veninga, Frederick W., M.D., St. Louis, graduate of the National University of Arts and Sciences Medical Department, St. Louis, 1906; member of the St. Louis Medical Society; Fellow of the American Medical Association; aged 66; died November 10, 1940.

Stutsman, David Burford, M.D., St. Louis, graduate of St. Louis University School of Medicine, 1923; member of St. Louis Medical Society; Fellow of the American Medical Association; member American Board of Urology; aged 45; died January 6.

## DIAGNOSING SUBNORMAL TEMPERATURES ASSOCIATED WITH NERVOUS SYMPTOMS

Much needless investigation and treatment of persons with subnormal temperatures associated with certain other evidences of nervous imbalance, especially those in whom the symptoms become evident during wartime, can be avoided if their complaints are considered as a whole rather than attention being focused on isolated signs and complaints, Hobart A. Reimann, M.D., Philadelphia, declares in *The Journal of the American Medical Association* for November 9.

Dr. Reimann studied nine patients with such symptoms as subnormal temperatures, slow pulse, palpitation, sweating, weakness, dizziness and numerous complaints for which no organic basis could be found. These symptoms, he believes, are evidence of a general susceptibility to nervous disorder. They are similar to those described in wartime as "soldier's heart" and probably arise from similar causes. In his patients numerous minor surgical operations, expensive laboratory investigations and many drugs were employed which could probably have been avoided had less attention been focused on isolated signs and complaints and the syndrome (set of symptoms) recognized as a whole.

Discussing the relationship of such complaints to war, Dr. Reimann points out: "In certain persons accidents, injuries, psychic (mental) shock, infections or the physical and emotional strains during war or threatened war bring the symptoms to a clinical level.

"Since neurocirculatory asthenia ('soldier's heart') is a serious problem in all great wars, it is bound to be of immediate importance in this country as soon as the draft of men for military service begins. It causes many difficulties in diagnosis and is one of the most frequent causes of invalidism among soldiers. However, it is questionable whether such names as 'soldier's heart' or any other terms directing attention chiefly to the vascular (blood vessel) system are desirable.

"Unless patients of this type are given a correct diagnosis they may be assigned to tasks beyond their limitations during military service. After possible organic causes for their disorder have been ruled out, treatment along psychotherapeutic (mental) and physical therapeutic lines is helpful."

## EPIDEMIC INFLUENZA TREATMENT STILL CONCERNS SYMPTOMS, NOT CAUSES

Modern treatment of epidemic influenza must still concern itself with symptoms rather than causes, *The Journal of the American Medical Association* for January 18 declares in answer to an inquiry.

"There is no specific treatment for true epidemic influenza," *The Journal* says. "Modern therapy (treatment) is of necessity still symptomatic. It places a special emphasis on two points: rest in bed and good nursing care. The patient should be put to bed as early as possible after onset of the disease and kept there until convalescence is well established. The object of good nursing is to promote the comfort of the patient and to preserve his strength. The diet during the acute stage should be liquid, should be given at frequent intervals and should not exceed 3,000 cubic centimeters (about 3 quarts) per day. A small enema on the second or third day is preferred to purgation by cathartics. Headache and body pains are combated by judicious and restricted use of analgesics (pain-relieving drugs) and sedatives, among which salicylates and codeine are probably most useful. The irritating cough is treated by keeping the air of the sick room moist, by inhalation of compound tincture of benzoin in steam and by expectorant and sedative drugs.

"It has been established that *Haemophilus influenzae* (Pfeiffer's bacillus) is not the cause of the disease but that a virus and probably at least two strains cause epidemic influenza."

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL  
MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

Chariton County Medical Society, December 2, 1940.

Montgomery County Medical Society, December 2, 1940.

Perry County Medical Society, December 14, 1940.

Ste. Genevieve County Medical Society, December 17, 1940.

Camden County Medical Society, January 7, 1941.

Andrew County Medical Society, January 9, 1941.

were Drs. T. S. Duff and Harvy Nally, Cainesville; C. J. Laws, J. M. Perry, A. S. Bristow and E. W. Stacy, Princeton.

J. M. PERRY, M.D., Secretary.

### FIFTH COUNCILOR DISTRICT

W. A. BLOOM, FAYETTE, COUNCILOR

#### Cole County Medical Society

The Cole County Medical Society held its annual meeting in Jefferson City on December 17.

The following officers were elected: President, Dr. Thomas J. Kelly, Jefferson City; vice president, Dr. Harry B. Stauffer, Jefferson City; secretary-treasurer, Dr. James A. Hill, Jefferson City.

Dr. Thomas J. Kelly resigned as delegate upon his election as president and Dr. Harry B. Stauffer, the alternate, became the delegate.

JAMES A. HILL, M.D., Secretary.

#### Cooper County Medical Society

The Cooper County Medical Society met in a joint dinner meeting with the Howard County Medical Society at St. Joseph's Hospital, Boonville, November 14. The following members and guests were present: Drs. Arie C. H. Van Ravenswaay, W. H. Ziegler, G. W. Winn, W. E. Stone, T. C. Beckett, G. W. Blankenship, Lee I. Shuck, H. D. Quigg, R. L. Evans, M. S. McGuire, J. C. Tincher, Boonville; G. L. Chamberlain, New Franklin; W. J. Shaw, W. A. Bloom, Fayette; J. W. Gardner, W. B. Kitchen, W. R. Hawkins, Glasgow; W. J. Stewart, Eugene Bricker, J. E. Allen, H. E. Allen, H. H. Sweets, C. R. Bruner, L. Ackerman, Columbia; J. O. Boley, Pilot Grove; Thomas J. Kelly, Jefferson City; S. P. Simmons, John R. Lawrence, Marshall; J. W. Winn, Higbee; C. G. Stauffacher, Sedalia; John J. Brown, R. N. Crews, Fulton; W. G. Gunn, J. L. Washburn, Versailles; Leo Gottlieb, Brian B. Blades, St. Louis.

Dr. G. L. Chamberlain, New Franklin, served as toastmaster at the dinner which was given in honor of Dr. W. E. Stone, Boonville, who is to serve with the Medical Detachment of the 128th Field Artillery at Fort Jackson, South Carolina. Dr. G. W. Winn, Boonville, presented a gift to Dr. Stone.

Dr. W. B. Kitchen, Glasgow, president of the Howard County Medical Society, and Dr. W. A. Bloom, Fayette, Councilor of the Fifth Councilor District, spoke briefly.

Dr. Brian B. Blades, St. Louis, gave an interesting discussion illustrated with lantern slides of "The Surgical Treatment of Bronchiectasis."

Dr. Leo Gottlieb, St. Louis, gave an instructive talk on "Pneumonia."

The meeting was thoroughly enjoyed and plans were discussed for a joint meeting with the Howard County Medical Society at Fayette in the near future.

J. C. TINCHER, M.D., Secretary.

### SIXTH COUNCILOR DISTRICT

A. J. CAMPBELL, SEDALIA, COUNCILOR

#### Henry County Medical Society

The Henry County Medical Society met with the Tuberculosis Association at the General Hospital, Clinton, December 20.

Dr. R. H. Runde, Mount Vernon, presided at an informal discussion at a luncheon meeting.

The following officers were elected: President, Dr. J. W. Galbreath, Urich; secretary, Dr. Edwin C. Peelor, Clinton.

EDWIN C. PEELOR, M.D., Secretary.

### ASSOCIATE EDITORS: COUNCILORS OF THE TEN COUNCILOR DISTRICTS

#### FIRST COUNCILOR DISTRICT

A. S. BRISTOW, PRINCETON, COUNCILOR

##### Caldwell-Livingston County Medical Society

The Caldwell-Livingston County Medical Society met at Chillicothe on January 7.

The following officers were elected: President, Dr. Henry H. Patterson, Braymer; secretary, Dr. V. D. Vandiver, Chillicothe.

H. M. GRACE, M.D., Secretary.

##### Grundy-Daviess County Medical Society

The Grundy-Daviess County Medical Society met at Trenton, January 9.

The following officers were elected: President, Dr. E. J. Mairs, Trenton; vice president, Dr. O. R. Rooks, Trenton; secretary and treasurer, Dr. E. A. Duffy, Trenton; delegate (Grundy County), Dr. C. H. Cullers, Trenton; alternate, Dr. W. A. Fuson, Trenton; delegate (Daviess County), Dr. R. V. Thompson, Jamesport, alternate Dr. F. K. Wilson, Winston; censor for three years, Dr. Bertha E. Sheetz, Trenton.

E. A. DUFFY, M.D., Secretary.

##### Mercer County Medical Society

The Mercer County Medical Society met at Princeton, January 6, at the office of Dr. C. J. Laws.

The following officers were reelected: President, Dr. G. M. Bristow, Princeton; secretary and treasurer, Dr. J. M. Perry, Princeton.

Dr. C. P. Pickett was elected a member.

Mr. Leroy Bryan, Mercer, representative of Mercer County, was a guest of the Society. Members present

**NINTH COUNCILOR DISTRICT**

ELDON C. BOHRER, WEST PLAINS, COUNCILOR

**Phelps-Crawford County Medical Society**

The Phelps-Crawford County Medical Society met at the Nelle McFarland Memorial Hospital, Rolla, December 9.

Officers of the Society were reelected for 1941 as follows: President, Dr. A. H. Horne, Steelville; vice president, Dr. A. A. Drake, Rolla; secretary-treasurer, Dr. R. E. Breuer, Newburg; delegate, Dr. R. E. Breuer, Newburg; alternate, Dr. E. A. Stricker, Rolla.

The Society voted to assess each member from Phelps County \$10 to apply on a fund to establish a public health unit in Phelps County.

Dr. A. S. McFarland, Rolla, spoke on "Surgical Treatment of Appendicitis," and discussed his thirty years of experiences.

Twenty-one physicians were in attendance.

R. E. BREUER, M.D., Secretary.

**TENTH COUNCILOR DISTRICT**

E. J. NIENSTEDT, SIKESTON, COUNCILOR

**St. Francois-Iron-Madison-Washington-Reynolds County Medical Society**

The St. Francois-Iron-Madison-Washington-Reynolds County Medical Society met at the St. Francois County Courthouse, Farmington, December 27 at 7:30 p. m.

Dr. G. Tivis Graves, Farmington, gave an interesting discussion on "The Emergency Treatment of Convulsions in General Practice."

Dr. Paul L. Jones, Flat River, gave an excellent talk on "The Treatment of Streptococcus Viridans Infection." Dr. Jones stated that he was much interested in contacting anyone that can present laboratory proof of having had the disease and having recovered as he now has a case for which he would like to procure a blood donor.

The following members were present: Drs. C. H. Appleberry, Paul L. Jones, Flat River; Reuben Appleberry, G. Tivis Graves, N. W. Hawkins, Emmett F. Hctor, Farmington; Harry W. Barron, Fredericktown; Marvin Haw, David E. Smith, Bonne Terre; J. W. Hunt, Leadwood; John P. Yeargain, Irondale.

G. TIVIS GRAVES, M.D., Secretary.

**Ste. Genevieve County Medical Society**

The Ste. Genevieve County Medical Society held its annual meeting at Ste. Genevieve on December 11.

The following officers were elected: President, Dr. R. C. Lanning, Ste. Genevieve; vice president, Dr. G. M. Rutledge, Ste. Genevieve; secretary-treasurer, Dr. R. W. Lanning, Ste. Genevieve; delegate, Dr. A. E. Sexauer, Ste. Genevieve.

R. W. LANNING, M.D., Secretary.

**EYES OF CHILDREN MORE SUSCEPTIBLE TO INFECTION THAN ADULTS**

The eyes of young children are more susceptible to infection than those of adults, Constance J. Foster, Great Neck, New York, points out in *Hygeia, The Health Magazine*. Any child with inflamed or running eyes or swollen, sticky or red eyelids should be separated from other children and examined immediately, she says. So-called "pink-eye" is highly contagious, and the wash cloth and towel of a child with this disease must be reserved for his own exclusive use. A slightly red eye may be an inflammation of the iris instead of merely a "cold in the eye," and can result in a serious visual loss unless promptly treated. It is most unwise to use home remedies in an eye before an accurate diagnosis has been made by a qualified specialist.

**WOMAN'S AUXILIARY****WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION**

19th Annual Meeting, Cleveland

President, Mrs. V. E. Holcombe, Charleston, W. Va.  
President-Elect, Mrs. R. E. Mosiman, Seattle, Wash.

**WOMAN'S AUXILIARY TO THE MISSOURI STATE MEDICAL ASSOCIATION**

President, Mrs. Stanley P. Howard, Jefferson City.  
President-Elect, Mrs. J. J. Drace, Chillicothe.  
Adviser, Dr. Herbert L. Mantz, Kansas City.

**Why Read the Bulletin?**

Address of Mrs. V. E. Holcombe, Charleston, W. Va.,  
President of Woman's Auxiliary to  
American Medical Association

The nineteenth year of the National Auxiliary is well under way. Ere this, I am sure you realize that our project for the year 1940-1941 is to increase the circulation of the *Bulletin*, our official organ. In selecting this project, we have done so with the full realization that it is a hard one.

Do you want to know more about the program of the Auxiliary and the working of each of the several committees? Do you want to know why we promote the sale of *Hygeia*? Do you want to know why we feel it our duty and privilege to emphasize a health program, encourage a public relations and a legislative program? Do you want to know what the Auxiliary stands for, why so many fine intelligent women are giving much of their time to this organization and why the doctors themselves encourage the growth and expansion of our activities? Read the *Bulletin*, the Auxiliary digest. Become informed on the whole program of the Woman's Auxiliary to the American Medical Association and its component auxiliaries.

An organization without appropriate and special literature is like a garden without plants. The possibilities for growth are there but there can be no good fruitage without the planting of seeds and the cultivation of the plants. There can be no continuation of a garden without a cherishing of seeds and plants and a reseeding and replanting year after year. Only thus does a garden grow.

Little did I realize when I became president of the Auxiliary that I should soon become a mere "sales agent" for our periodical. Yet here I stand before you, ready to present my little sales talk regarding the publication of the Woman's Auxiliary. And, in passing, I would have you realize that I am not working my way through college, finishing school or an N. E. A. correspondence course by stimulating such a circulation. I am working solely and simply in behalf of the Woman's Auxiliary in its efforts to make our organization a constructive force in furthering the programs and ideals of the American Medical Association. Disseminating Auxiliary news and activities through the *Bulletin* to the most remote Auxiliary and member, I shall consider my greatest service. There are two questions which I have often been asked in this connection: first, "Why do you place so much stress upon the importance of the *Bulletin*?" second, "Is it really so all important that the *Bulletin* have a large circulation?"

Everyone recognizes this truth—that progress in any organization is dependent on facts, observations and conclusions communicated by one individual to another and recorded for future generations, and each generation building on the foundation work of former generations; each set of officers profiting by the ex-

periences of their predecessors, ever striving to bring to fruition the visions of pioneer leaders, broadening the path and extending it, always toward the goal of highest organization efficiency. It is these and other factors which I feel must be emphasized, and it is only by constant, almost monotonous emphasis that we can hope to lift the *Bulletin* to its rightful place of usefulness in the Auxiliary world.

For those of you who possibly may not be entirely up-to-date in this respect, I might mention that the *Bulletin* is merely the new name which has been given to the publication that was formerly called the *News Letter*. It is an attractive little booklet, issued quarterly—price \$1.00 per year. It is published for the express purpose of furthering our fellowship and propagating the principles and ideals of our organization. Advancement in any organization is in direct relationship to the improvement of facilities for the exchange and interchange of facts, information, knowledge and truth, and the proper use of those facilities.

There is hardly an organization of any size or significance existing today that does not have a periodical, well supported and subscribed to. I could list these by the hundreds but it is a well known fact which needs no repeating.

In this connection, I might add that the American Medical Association not only publishes its journal but the health magazine, *Hygeia*, in order to keep its members and the public informed regarding the various developments of medicine. The state societies also have their own journals, all of which are of the utmost importance to the medical profession. Our *Bulletin* could be equally important. It is with this truth in mind that it is published. Through it new ideas and new knowledge are transmitted to the various members of our Auxiliary. Many valuable ideas would die with the originator were it not for the aid given by the *Bulletin* in providing them with an audience. A competent editorial leadership directs and guides its policies. Authoritative writers and otherwise discerning observers present, from time to time, a sweeping panorama of events of interest and importance.

There are so many worth while happenings in the medical world of today which are interesting to know even if they are never used. With the questionable and critical attitudes toward the medical profession which have arisen in the past few years, it is important that we pool our assets and present a united front to adverse forces and influences.

Dr. Parran, chief of the United States Public Health Service, says that last year was the healthiest year in the history of the United States; viz., the death rate was lowest per capita. In spite of all drives and scares and tales of neglect, the United States is the healthiest country in the civilized world. Even the most bureaucratic minded and garrulous must give the medical men of the world the credit for this condition. Increasing the span of life from 37 to 65 years in less than a century was not accomplished by law makers. The wives of medical men need to know such facts as these.

With the added responsibility of the privilege of voting, women should be versed in the matters on which they vote. Legislation is now pending which will vitally affect the whole outlook of the medical profession. The trend of laymen and lay organizations is serious. Doctors' wives can have an influence on such legislation if they know the facts. They have many avenues of contact where they may influence public opinion toward a fair presentation of the actual facts.

We are pleased that we have the favor of our outstanding medical men in the expansion of the *Bulletin*. We had a fine article by Dr. Van Etten, president of the American Medical Association, in the fall issue, and have one from Dr. Lahey, President-Elect, for the winter issue.

The *Bulletin* is our medium of information. The members should read it because it conveys to them

knowledge of what other members are doing. They may read that there are others who have problems and the way they were solved. A tie of interest and understanding is formed through the channels of information concerning each other. The *Bulletin* gives the main facts about the activities in which our organization is engaged and the progress thereof. It presents the essential features of what is transpiring.

A small percentage of our membership is reading the *Bulletin*. We are so sure that the Auxiliary will be best served by enlarging the list of readers that we are making this our major project of the year. We shall also strive to make each issue better than the last in order to give more consideration to the publication; we shall make a sound investment, certain to be productive of future gains in every way.

Every member of our Auxiliary should realize her responsibility to our official publication. The power of the *Bulletin* in your organization is dependent upon whether it is given a place there or not. No instrument of righteousness, however excellent, can have an effect for good on those whom it has no opportunity to touch. There is no magic power in food to nourish those who fail to partake of it. There is no efficiency in a *Bulletin* that is never read.

The immediate goal of our Auxiliary is to increase the circulation of the *Bulletin* to include at least one fourth of our Auxiliary membership. That means that we should have approximately 6,000 readers. It means that your Auxiliary must send at least one fourth of your membership.

We feel that you and all readers will be amply repaid by having first hand knowledge of the activities of the finest profession in the world and its Auxiliary. With this information and inspiration we feel that we shall all be more worthy members of the Woman's Auxiliary to the American Medical Association.

Won't you put on an active drive now to reach your quota? Let's get the subscriptions in at once in order that we may have the news of the administration during the term of the administration. Contact all of your members and give them the privilege of subscribing or refusing; many have never heard of the *Bulletin* because in its present form it is only two years old. Will you do your part in telling them about it? We sincerely believe it will do much to benefit the Woman's Auxiliary. Send your subscriptions and dollars to Mrs. H. E. Christenberry, Circulation Manager, Highland Drive, Knoxville, Tennessee.

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## BOOKS FOR LEISURE MOMENTS

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### NEUTRONS, CYCLOTRONS, LEUKEMIA

If any person doubts the university of science, he should read "Why Smash Atoms" (Harvard University Press, Cambridge, Massachusetts) by Arthur K. Solomon. The collaboration of research workers of every nationality has developed understanding of the atom, has extended the use of the atom even to the treatment of disease. The World War killed Rutherford's student, Moseley, whose "clarity of insight remains astonishing even today when all the results of his experiments are accepted as a matter of fact." By contrast the English Chadwick, interned in a German prison camp, continued his work on radioactivity because the thoughtful kindness of the German, Geiger, provided the instruments necessary to make even incarceration as a hostage of war profitable to humanity.

These years of investigation, chiefly since 1908, resulted in the development of the cyclotron, a complex instrument capable of driving neutrons into the atomic nucleus with a resulting change in the physical characteristics of the new element. Just at the moment en-

couraging experiences with activated phosphorus in the treatment of leukemia are reported. The material is injected, absorbed, deposited in the bones where it exerts a specific radioactivity on the marrow more valuable than that of the deep therapy machine.

It is too soon to determine the efficiency of cyclotron-treated elements in the field of medicine but they offer much promise. Indeed, the entire field offers just as much fascination as the alchemist's search for the philosopher's stone in an earlier day for it might be said that the modern cyclotron offers the first hope the world has ever known for the transmutation of metals.

B. Y. G.

#### JOBS, EMPLOYEES, SERVANTS

The world's biggest civil employer is the United States government. In addition to those appointments which may be considered patronage matters, a million persons work for the government. The matter of their selection is involved, a bit tedious, as impersonal as a steadfast determination upon merit alone can make it. James C. O'Brien and Philip P. Marenberg tell about it in "Your Federal Civil Service" (Funk & Wagnalls, New York).

This account of admittedly bureaucratic procedure could be the driest reading of the year but O'Brien and Marenberg stimulate, arouse and hold the interest of the reader. Instead of putting the reader to sleep, this volume multiplies his admiration for the system through which his government hires and keeps at work. Even a few physicians, notably those in the Veteran's Administration Facility and the Marine Hospitals, are chosen according to this same careful formula, their salaries ranging from \$2,000 to \$6,000. Like all other Civil Service appointees, they enjoy an adequate retirement income with a choice of optional settlements that is attracting increasing numbers of talented capable employees to the federal payroll.

B. Y. G.

#### PROTECTION AGAINST X-RAY HAZARDS

"However safe x-ray equipment is made, it is a dangerous and lethal tool in the hands of the ignorant, careless or inexperienced operator," Lauriston S. Taylor, Ph.D., Washington, D. C., declares in *The Journal of the American Medical Association* for January 11 in a discussion of means of protection against possible harm from x-rays, published under the authority of the Council on Physical Therapy of the Association.

His article is aimed particularly at the protection of the x-ray operator. X-ray treatment rooms, he says, should be constructed of some protective material such as lead or concrete, or the walls should be covered with a special plaster. This affords protection to the operator, who remains outside the room.

Protection from "scattered rays," those which have been deviated from their course and thus fall elsewhere than directed, is as important as protection from direct rays but is too often ignored, Dr. Taylor points out.

The x-ray specialist should wear protective gloves and aprons, Dr. Taylor advises. He warns, however, that "the use of goggles and the like in a poorly protected room gives a false sense of security and may lead to carelessness and thus to injury."

For the protection of the patient it is essential to determine his "tolerance dose," the amount of x-ray energy that he may receive continuously or at repeated intervals without suffering any damage to the blood or reproductive organs.

"Education and the restriction of sales only to qualified people such as radiologists and technicians will probably go furthest in minimizing the hazard of x-ray equipment," the author says.

## BOOK REVIEWS

**SURGICAL ANATOMY OF THE HEAD AND NECK.** By John Finch Barnhill, M.D., F.A.C.S., LL.D., formerly Professor of Otolaryngology in Indiana University School of Medicine. Emeritus Professor of Surgery of Head and Neck Surgery, Honorary Professor of Anatomy, University of Southern California; and William J. Mellinger, M.D., Associate Professor of Anatomy, University of Southern California School of Medicine, Chief of Department of E.E.N.T. Cottage Hospital, Santa Barbara, etc. Second edition. Rearranged and revised with many new illustrations, several in colors. Baltimore: Williams & Wilkins Company. 1940. Price \$15.00.

The object of the book, as stated by the author, was not to write on anatomy but rather to coordinate anatomy and surgery and state the uses to which a knowledge of anatomy may be put. No one could be better qualified to present this material than Dr. Barnhill with his long career as a teacher of both anatomy and clinical surgery of the head and neck.

The book is based on Dr. Barnhill's postgraduate courses and material is presented in a way that is stimulating as well as instructive. Illustrations are based on actual dissections and show great accuracy of detail. In this second edition the illustrations are placed with the text rather than in a separate section. This edition has an unusually complete and easily used index.

The arrangement of the text brings out the important points. Normal and pathological physiology and embryology are discussed where they are of value to the physician.

The book is invaluable to the otolaryngologist and highly valuable to the general surgeon, the brain specialist, the oral surgeon and the ophthalmologist.

S. S. S.

**YEAR BOOK OF PATHOLOGY AND IMMUNOLOGY, 1940.** Edited by Howard T. Karsner and Sanford B. Hooker. Chicago: The Year Book Publishers, Inc., 1940.

Year books have become an institution since the Practical Medicine Series was founded in 1900. One specialty after another has come to be included in the series, which, published as a private undertaking, has perforce been guided by the possibility of doing profitable business. With the appearance in 1940 of the welcome and long needed "Year Book of Pathology and Immunology," this fundamental province of medical science for the first time is represented in the series. The courage and enterprise of Mr. H. A. Simons, president, merits recognition for it is a problem to be decided only by experiment whether the demand for this member of the series will repay its cost. I think it will, for specialists in pathology and immunology will scarcely be willing, or long able to afford, to deny themselves such ready access to the vast and growing medical literature as this Year Book provides. Likewise, medical scientists, whatever their specialties may be other than pathology and immunology, will see at once that contributions of importance to their medical information are placed at their fingertips in carefully and expertly condensed, accurate, understandable and intelligently selected abstracts.

One approves the choice of editors for Howard Karsner and Sanford Hooker are experienced, capable and authoritative men and the competency of their editorial work is apparent. Their personal comments on many topics are indeed valuable. The field covered is a huge one, so that the task of the editors is a responsible one.

In the 380 pages and 113 figures devoted to pathology, one finds abstracts of Hass' researches on intercellular lipid-protoplasmic reactions, Bloor's on fat transport, Schmidt's on iron metabolism, Dubos' on his antibacte-

rial derivative of soil organisms, Kolouch's on the lymphocyte in inflammation, Faber's (with coworkers) on coccidiomycosis with erythema nodosum, Tonutti and Wallraff's on histophysiology of the tubercle, numerous articles on Schaumann's sarcoid, Greene's work on familial mammary tumors of rabbits, Kidd and Rous' on virus rabbit papillomas and cancers, numerous researches on chemical carcinogenesis (which are dermatologic studies in many instances, blandly ignored by most dermatologists), Broder's (and coworkers) on fibrosarcoma and its malignancy, Gray's on lymphatic spread of cancer, Kahn's on hypertension, de Navasquez' on bacterial endocarditis, Dick and Freeman's on temporal arteritis, Apitz' on leukemias and several studies of multiple myeloma. There are many articles on diseases of the respiratory system, alimentary tract, urinary system, female genitalia and breast, organs of locomotion, glands of internal secretion and the nervous system. Under "technical methods," seventeen useful abstracts appear including German's Hortega silver impregnation stains and Pickoff's twelve day method of diagnostic guinea pig inoculation for tuberculosis.

Many articles are taken from German journals, several from Spanish, a few from French, perhaps the majority from those in the English language. Only a magnificent library, far beyond the facilities available to the majority of physicians, could provide such material. This solid little volume, with its 662 pages plus subject and author indexes, is one which all pathologists, immunologists, libraries and progressive medical scientists will desire. It is the latest of the Year Books and should be the one which meets the widest demand. I wish it the success it merits.

R. S. JR.

**THE PRACTICE OF MEDICINE.** By Jonathan Campbell Meakins, M.D., LL.D., Professor of Medicine and Director of the Department of Medicine, McGill University; Physician-in-Chief, Royal Victoria Hospital, Montreal, etc. Third edition. With 562 illustrations including forty-eight in color. St. Louis: The C. V. Mosby Company. 1940. Price \$10.00.

Improved, revised and slightly enlarged the third edition of Meakins, "The Practice of Medicine" has just come from the press.

As the product of a single author the work is monumental and certainly it is one of the best texts on medicine today. There is a uniform quality to the writing which can best be compared to that of Osler, and the numerous illustrations add to the value of the book.

Special mention should be accorded to Chapter I, "An Introduction to the Practice of Medicine." Every student should read it and graduates should reread it, especially specialists.

The third edition has a new blue binding which appears to be more durable and is an improvement over the binding of the earlier editions.

B. S. P.

**GYNECOLOGY. Medical and Surgical.** By P. Brooke Bland, M.D., F.A.C.S., Professor Emeritus of Obstetrics, The Jefferson Medical College, Philadelphia; Consulting Obstetrician to The Jefferson Medical College Hospital, Philadelphia, etc.; Assisted by Arthur First, M.D., Associate in Obstetrics, The Jefferson Medical College Hospital, Philadelphia, etc. Third Revised Edition. With 445 Illustrations, mostly original, including thirty-one full page Plates in Color. Philadelphia: F. A. Davis Company, Publishers. 1939. Price \$8.00.

This rather recent addition to gynecological bibliography is interestingly handled for specialists, general practitioners and students in a concise manner. It maintains the reader's interest and yet covers the entire field.

The initial chapter, "Anatomy and Physiology," al-

though brief, covers the field satisfactorily and contains several valuable illustrations clarifying rather complicated physiological processes. The chapter, "Endocrinology," is complete and may well serve as a reference because it is to the point and as clear as such a complex problem can be made. The discussion of "Symptomatology and Methods of Diagnosis" should prove valuable to the student and general practitioner as well as to the specialist who may have become a little dissatisfied with his own manner of carrying on.

The chapter on "Disorders of Menstruation" is nicely handled and limits itself to the methods that no doubt have been successful in the author's hands and omits many of the procedures advised that have had only partial or transient success. "Disorders of Function," chiefly relating to sterility, is handled completely and thoroughly and I feel investigations such as recommended would be sufficiently inclusive to arrive at the cause of sterility and be helpful in overcoming it. The chapter on "The Vulva" is complete, profusely illustrated and should be valuable to any person taking care of women. The discussion of "Hymen and Vagina" gives a good consideration of both structures together with an informative review of the biology of the vagina, and vaginitis. The question of relaxations and the requisite operations is not particularly well illustrated.

"Fistulas," urinary and fecal, are well illustrated and generally the chapter is valuable for the information available for prevention and cure of these annoying complications. The question of anomalies of the uterus receives thorough anatomical consideration. The injuries of the cervix and the corrective operations are well illustrated. There is the usual complete review of the inflammatory processes involving this organ. The chapter dealing with "Displacements of the Uterus," namely, deviation in level, presents excellent illustrations and discussion of the supports and the floor of the pelvis. The factors causing displacements are given major consideration and the operations to remedy the condition are the well recognized operations with ligament shortening as well as hysterectomy for prolapse. The chapter provides a complete discussion of the diagnostic problems involved as well as thorough handling of the question of symptoms, general and local, and the medical, mechanical and surgical treatments. "Inversion of the Uterus" is good reference material containing descriptions of most of the accepted methods of handling except the intra-abdominal method of Huntington.

"Benign Tumors of the Uterus" are well illustrated with complete review of the pathology, symptoms, local and general, relation to pregnancy, operations, complications and dangers. Hydatidiform mole with its unusual features and treatment is considered.

"Malignant Tumors of the Uterus" presents excellent clinical and pathological data, particularly of cancer of the cervix and the body, and modern methods of treatment.

The various conditions of the fallopian tubes including inflammatory diseases, tumors and ectopic pregnancy, are covered in three chapters that are complete and well illustrated with adequate discussion of the accepted successful methods of treating. Two chapters dealing with diseases and tumors of the ovaries give a good anatomical description of the anomalies and inflammations and contain an excellent pathological classification of these tumors.

"Endometriosis" with the various theories of its production, treatment in different locations of the body and the factors influencing the choice of treatment is well handled. The usual discussion of parametritis and perimetritis is found in the chapter on "The Pelvic Peritoneum and Cellular Tissue."

The methods of investigation of diseases and abnormalities of the urinary tract together with considera-

tion of the common infections with treatment is rather sketchily handled. "Therapeutics" is inclusively considered from the general, medical, mechanical, electrical, radiological and surgical aspects separately as well as combined measures that are relied upon in treatment.

Consideration of gynecological radiation includes a complete analysis of the roentgen ray as a diagnostic aid. The various forms of radiation, the physics of the agents and indications in malignant, benign and functional disturbances is very well treated.

The chapters dealing with strictly surgical questions such as preoperative preparation, anesthesia and surgical technical methods are valuable to the general practitioner and the beginner but do not consider adequately the question of local infiltration anesthesia in gynecological plastic procedures.

The final chapter dealing with postoperative care is inclusive and built along safe lines. However, I do not feel that enough emphasis is placed on the administration of intravenous fluids following operation, the valuable place of blood transfusions and the advantage of rest and quiet for the recently operated patient. The complications and their care are nicely handled.

O. S. K.

**SYNOPSIS OF MATERIA MEDICA, TOXICOLOGY, AND PHARMACOLOGY.** For Students and Practitioners of Medicine. By Forrest Ramon Davison, B.A., M.Sc., Ph.D., M.B., Assistant Professor of Pharmacology in the School of Medicine, University of Arkansas, Little Rock. With forty-five illustrations, including four in color. St. Louis: The C. V. Mosby Company. 1940. Price \$5.00.

This handy volume of some 600 pages is packed with the sort of practical information that the physician wishes to have within easy reach at all times. Moreover, there are sufficiently extensive reference bibliographies at the end of each chapter to guide the student of medicine into any special reading which his interest and time will justify. Except for such occasional urge for detailed and exhaustive study he will find the pages adequate to the general demands of a textbook of pharmacology. There are well selected charts and diagrams from the experimental laboratory illustrating the pharmacologic action of the more important drugs but the clinical application of pharmacologic knowledge always receives chief stress and where opinions differ the important points of divergence are cited. The twenty-five pages devoted to the anatomy and physiology of the heart muscle and the action and uses of the digitalis group are a masterpiece of clear, concise and informative writing, positive in statement and advice without excluding the moot points upon which unanimity has not as yet been reached. The recent drugs are included in the book with avoidance of overstatement as to their merits and with an open attitude as to the importance which further clinical use may assign to them. The student and the practitioner alike will find the book excellently suited to his needs.

J. E. C.

**PRACTICAL BEDSIDE DIAGNOSIS AND TREATMENT.** By Henry Joachim, M.D., F.A.C.P., Formerly Clinical Professor of Medicine, Long Island College of Medicine, etc., at Present Chief-of-Medicine, Israel-Zion and Beth Moses Hospitals, etc. Springfield, Illinois and Baltimore, Maryland: Charles C. Thomas. 1940. Price \$7.50.

A new and different type of differential diagnosis in which the diseases are stressed instead of signs and symptoms is presented in this book, written by an author who has spent a great deal of time at the patient's bedside.

Although the diseases are stressed as they involve the various organs and systems of the body, numerous signs and symptoms also are cited. A differential diagnosis is given and a brief summary of treatment follows discussion of each disease. Two sections are devoted to dis-

ease as caused by physical and chemical agents and metabolic and nutritional factors.

This is a concise, clear and informative book, particularly adapted for medical student, general practitioner and internist.

A. E. U.

**DISEASES OF THE DIGESTIVE SYSTEM.** A Text-Book for Students and Practitioners. By Eugene Rosenthal, M.D., Lecturer in the Medical Faculty, Royal Peter Pazmany University, Budapest, Hungary, with a Preface by R. J. V. Pulbertaft, M.D., F.R.C.P., Reader in Pathology, University of London; Director of the John Burford Carlill Laboratories and Curator of the Museum, Westminster Hospital School of Medicine. With 234 illustrations, including 104 in color, and sixteen tables. The C. V. Mosby Company. 1940.

The author presents a remarkable, fascinating and unique approach to the diseases of the digestive system. The volume does not become engrossed in lengthy, complicated and theoretical discussions of digestive system maladies but contains in 384 pages a careful, well-organized review of the essential characteristics of these disease entities.

Throughout the text diagrammatic or pictorial accounts of each subject discussed allows elimination of detailed explanation relative to etiology, symptomatology, diagnosis and laboratory findings. The treatment of each disease and the management of the patient throughout the course of the disease are discussed briefly and adequately. The author has emphasized the importance and value of good histories and has brought forth numerous diagnostic aids concerning the methods of examination.

The author has placed before the medical student and intern, as well as the general practitioner, an invaluable, carefully written volume conveying clearly and concisely a vast amount of clinical knowledge of the diseases of the digestive system.

R. L. N.

**A TREATISE ON MEDICOLEGAL OPHTHALMOLOGY.** By Albert C. Snell, M.D., Lecturer in Ophthalmology, School of Medicine and Dentistry, University of Rochester; Consultant in Ophthalmology, Strong Memorial Hospital, and Rochester General Hospital, etc. Illustrated. St. Louis: The C. V. Mosby Company. 1940. Price \$6.00.

Snell's admirable book is the result of many years of experience in industrial ophthalmology and many years of service as a member of the Committee on Compensation for Eye Injuries of the American Medical Association, work in which he has been intensely interested from its beginning. This Committee has formulated methods for measuring accurately the different lesions of the eye and their effect on visual efficiency, giving proper values to central acuity, peripheral fields and muscle function, and also the relative and combined values for inequality of the two eyes. The conclusions of this Committee have been adopted by most of the states having workmen's compensation laws so that the estimation of just compensation is fairly standardized although some important differences remain to be corrected.

The greater part of the book is devoted to problems of evaluation of the effect of ocular deficiencies for purpose of compensation, including the problems of malingering and consideration of the remaining defects of compensation laws. Other chapters discuss thoroughly the legal obligations and hazards and rights of the physician in the practice of ophthalmology, the laws relating to malpractice and the duties and rights of the medical expert witness.

This is a most useful book for any physician's library, a complete exposition of all the important facts and procedures of medicolegal ophthalmology. Not the least of its merits is that it is clearly written, easy to read and easy to understand. It cannot be recommended too highly.

R. L. C.

# THE JOURNAL

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### A STUDY OF EPIDEMIC INFLUENZA

WITH SPECIAL REFERENCE TO THE 1940-1941  
OUTBREAK IN ST. LOUIS

S. EDWARD SULKIN, Ph.D.,

JOSEPH F. BREDECK, M.D.

AND

JOSEPH C. WILLETT, D.V.M.

ST. LOUIS

Since the isolation of a filterable virus from cases of epidemic influenza by Smith, Andrewes and Laidlaw<sup>1</sup> in 1933, investigations on this disease have been carried out in many different countries. It now is established firmly that a virus, initially pathogenic for the ferret and adaptable to the mouse, is the etiologic agent in influenza. Several strains of influenza virus were isolated in different parts of the world between 1933 and 1939.<sup>2, 3, 4, 5, 6, 7, 8</sup> The virus has been obtained from a high percentage of throat washings from patients in various epidemics, and apparently no difficulty has been encountered in determining the presence of the virus by inoculation of ferrets. On the other hand, there have been numerous reports of failure to recover virus during some small epidemics and from many sporadic cases diagnosed as influenza.<sup>9</sup> The indiscriminate use of the term "influenza" as a diagnosis of diseases which are similar clinically but differ etiologically probably accounts for the contradicting results. Correlated clinical and laboratory investigations made of epidemics of respiratory diseases diagnosed as "influenza" will ultimately lead to well defined criteria for establishing a true clinical diagnosis of influenza.

It is the purpose of this paper to report the results of virus neutralization and complement-fixation tests on acute phase and convalescent phase serum specimens from persons with epidemic influenza and to correlate clinical, laboratory and epidemiological observations. In studies which are still in progress similar analyses will be made of specimens obtained from persons with acute non-

influenzal respiratory diseases. The completed study will be reported at a later date. It is thus hoped to establish definite criteria for distinguishing true influenza from its imitators.

#### EPIDEMIOLOGICAL DATA

An increase in the usual incidence of acute upper respiratory infections was observed in St. Louis, as well as in many other parts of the United States, during the winter months of 1940-1941. According to reports of the United States Public Health Service<sup>10</sup> the current epidemic started in the mountain and Pacific regions and reached a peak in reported cases in California during the week ending December 14, 1940. Since influenza had been epidemic in Hawaii in September 1940 it is assumed that the virus was brought to the West Coast from the Hawaiian Islands when part of the United States fleet returned. The map presented in figure 1 indicates the probable route of spread of the present nation-wide outbreak. It will be noticed that states neighboring California (Washington, Wyoming, Oregon and Nevada) followed with peaks in reported cases during the week ending December 21, 1940. By the end of December the disease had spread into the South Central states and North Central regions. The epidemic apparently had not reached the Middle Atlantic or New England states at that time. However, simultaneous with the increase of cases in the South Central regions, a few

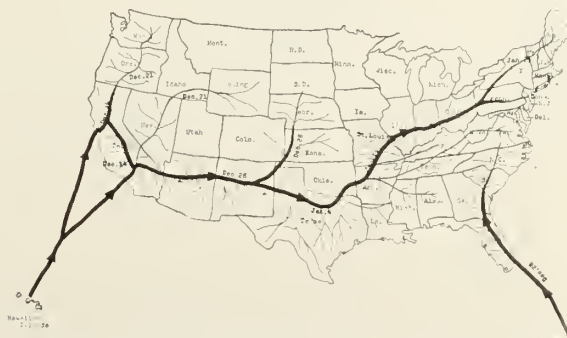


Fig. 1. Route of spread of 1940-1941 nation-wide outbreak of epidemic influenza.

From the Laboratory Section of the St. Louis Health Division, St. Louis.

states in the South Atlantic area reported an increase in number of influenza cases. It is interesting to note that prior to the outbreak in Hawaii approximately 100,000 cases were reported from Puerto Rico, probably accounting for the increase in incidence in the South Atlantic region. By the week ending January 4 the number of cases on the Western Coast declined while the incidence in the South Central regions increased.

The number of cases reported to the Epidemiological Section of the St. Louis Health Division\* reached a peak the week ending January 11. By the end of January the epidemic had reached Ohio, Pennsylvania and some of the New England states. The number of cases reported by the East Atlantic and Southeastern states reached a peak the week ending January 25. Dr. J. L. Rice, New York City Health Commissioner, stated in personal correspondence that in New York City at that time (January 30, 1941) there had been a substantial increase in respiratory infections such as grippe, colds and sore throats, and in the reported number of influenza cases, but these reports indicated that influenza had not reached epidemic proportions.

The mode of travel of the present outbreak of epidemic influenza from the West Coast to the East seems to resemble the previous epidemics of 1928-1929 and 1932-1933. The major epidemic of 1918-1919, on the other hand, began in the New England states and traveled westward and southward. In any case, however, it appears that the disease is "imported" to the country and spreads fanlike from the point of original entrance throughout the states.

#### MATERIALS AND METHODS

*Serum Specimens.*—A group of cooperating physicians\*\* were requested to submit acute phase serum specimens on all patients presenting acute upper respiratory infections. The specimens were obtained within the first five days of the disease. A convalescent phase serum specimen taken between the tenth and the thirtieth day also was procured from each patient.

*Neutralization Tests.*—The PR8 strain of epidemic influenza virus\*\*\* which was isolated by Francis<sup>2</sup> was used throughout these studies. Stock suspensions (20 per cent by weight), of infected mouse lungs, prepared as directed by Horsfall,<sup>11</sup> were used as the source of virus. Albino Swiss mice between 3 and 4 weeks of age were used in the test. The sera were inactivated by heating to 56 C. for thirty minutes. The acute and convalescent serums from a given patient were studied simultaneously against one suspension of the PR8 strain of epidemic influ-

enza virus. Serial fourfold dilutions of serum were made in 0.85 per cent NaCl, the volumes of the final solutions being 2.0 cc. Serial tenfold dilutions of the stock 20 per cent suspension of infected mouse lung were made in beef infusion broth containing 20 per cent normal horse serum and in the test a 10<sup>-3</sup> dilution representing approximately 3,000 50 per cent lethal doses of virus was used. The desired serum dilution (0.3 cc.) was thoroughly mixed with 0.3 cc. of the appropriate virus dilution and the mixtures were incubated at room temperature for thirty minutes. In testing the acute phase serum, four mice were used in a group receiving a particular serum dilution and virus mixture and six mice were used in a group in testing the convalescent phase serum. Each mouse was inoculated intranasally under light ether anesthesia with 0.05 cc. of the respective serum-virus mixtures. The animals were observed daily. Mice which survived the observation period of ten days were sacrificed and their lungs examined for the presence of pulmonary consolidation. The 50 per cent end point method of Reed and Muench<sup>12</sup> was used to determine the highest dilution of serum which was capable of neutralizing a given dilution of the virus suspension.

*Complement-Fixation Tests.*—Results of only a few complement-fixation tests on sera obtained from St. Louis influenza cases are presented in this report. More extensive studies using this test will appear at a later date.

*Nasopharyngeal Washings.*—"Garglings" were obtained from a few representative patients. A few cubic centimeters of sterile infusion broth was dropped into the nostrils of the patient who then gargled approximately 20 to 30 cc. of broth. The garglings were immediately frozen and transported to the laboratory. Washings were obtained within the first three days after the onset of the disease. Studies with these washings will also be reported later.

#### CLINICAL FINDINGS

The frequency of various symptoms\* among the first sixty-five cases studied in the present outbreak have been compared with those reported by Horsfall, Hahn and Rickard<sup>8</sup> in the 1939-1940 outbreak in Yorktown Heights, New York. The similarity of the clinical characteristics (figure 2) of the disease as it occurred in these two epidemics is obvious. No cases of postinfluenzal pneumonia occurred and both epidemics were characterized by absence of complications. The average duration of symptoms in the Yorktown epidemic was 4.9 days while the average in the present outbreak was about 5 days. The height of the pyrexia varied from 100 F. to 105 F. and the average duration of the fever was three or four days. The onset of the disease was

\*The number of cases reported was far below the actual number existing in the community.

\*\*The authors are indebted to the following physicians for their kind cooperation: Drs. W. R. Arrowsmith, M. E. Baron, C. G. Harford, J. W. Johnson, L. M. Kotner, M. N. Orgel, Llewellyn Sale, Harold Scheff, B. H. Senturia, E. Sigoloff, J. E. Smith.

\*\*\*The authors are grateful to Dr. Morris Schaeffer of the New York City Health Department for the PR8 strain of influenza virus.

\*Data concerning age, sex, color, date of onset, date of confinement, duration of illness, clinical findings and clinical pathological findings were obtained by means of questionnaires submitted to cooperating physicians.



Fig. 2. Frequency of clinical symptoms in two outbreaks of epidemic influenza: Yorktown Heights, New York, 1939-1940, eighty-three patients; St. Louis, 1940-1941, sixty-five patients.

\*Study conducted by Horsfall, F. L., Jr.; Hahn, R. G., and Rickard, E. R. (of the International Health Division of the Rockefeller Foundation): *J. Clin. Investigation* 19:379, 1940.

sudden with chills, headache and constitutional symptoms. Respiratory symptoms were limited to a feeling of rawness in the nasopharynx. Cough, though slight at first, usually increased; leukopenia was common. The disease was characterized by a prolonged, uneventful convalescence, the patient appearing pale and unwell for several days but without symptoms except for a slight cough and feeling of lassitude. An illustrative case of proved influenza A virus infection is given.

#### CASE REPORT

Case 8. Mrs. K. B., aged 27, white, was admitted to the hospital at 10 p. m. on January 2, 1941. The illness began two days previously with slight coryza and cough but no sore throat or expectoration. On the morning of the day of admission the patient became chilly and complained of generalized body aches, headache and general malaise. The cough was nonproductive. On admission, temperature was 102 F. The patient was flushed, nose appeared normal, tongue slightly coated, throat injected and exudate was present. Voice was slightly husky. There were no abnormal signs in the chest and the heart was normal. There was slight pain in the chest during coughing spells only. The following morning white blood cell count was 3,000. Temperature had fallen to 99 F. Patient had perspired freely during the night and had had several chills. The headache persisted. A white blood cell count on January 4 showed 5,900 cells. Nose felt slightly blocked and showed moderate amount of mucopurulent discharge. Headaches persisted. Temperature dropped to normal by January 6. Patient felt much better although slight cough persisted. During convalescence patient felt weak and slight cough still persisted. Patient was discharged on January 12.

**Laboratory Findings.**—Blood culture was negative. Blood sugar and nonprotein nitrogen were normal. Kahn test was negative. Schilling showed 2 per cent stabs, 67 per cent segments, 24 per cent lymphocytes, 7 per cent monocytes. Acute phase blood specimen taken on the second day after onset neutralized approximately 3,000 50 per cent end point lethal doses of type A virus in a dilution of 1:6, while convalescent phase serum specimen taken on the sixteenth day after onset neutralized the same dose of virus in a dilution of 1:90. A 1:4 dilution of acute phase serum and a 1:64 dilution of convalescent serum fixed the type A antigen. No increase in complement-fixing antibodies was demonstrated when the type B virus was used as an antigen in the complement fixation test.

#### LABORATORY FINDINGS

The results of parallel neutralization and complement fixation tests on serum from five cases of influenza are presented in table 1. In the complement fixation tests (conducted by Dr. Edwin H.

Table 1. Results of Neutralization and Complement Fixation Tests With Epidemic Influenza Virus of Acute and Convalescent Phase Blood Specimens From Each of Five Patients With Epidemic Influenza.

Patients		Neutralization Test*	Complement Fixation Test	
			Type A**	Type B***
5	A	1:9	0	1:8
	B	1:89	1:32	1:16
6	A	0	0	1:16
	B	1:110	1:16	1:16
7	A	1:5	0	0
	B	1:64	1:32	0
8	A	1:6	1:4	1:8
	B	1:90	1:64	1:8
9	A	1:12	0	1:4
	B	1:192	1:64	1:4

\*Serum titers are expressed in terms of neutralizing capacity against approximately 3,000 50 per cent mortality doses of type A virus (PR8 strain).

\*\*Infected chick embryo membrane suspension used as antigen.

\*\*\*Infected mouse lung suspension used as antigen. (Lee strain type B virus.) A. Acute phase serum. B. Convalescent phase serum.

Note: The complement fixation tests were conducted by Dr. Erwin H. Lennette of the Rockefeller Foundation.

Lennette of the Rockefeller Foundation), allantoic membrane suspensions from chick embryos infected with influenza A virus (PR8 strain) and lung sus-

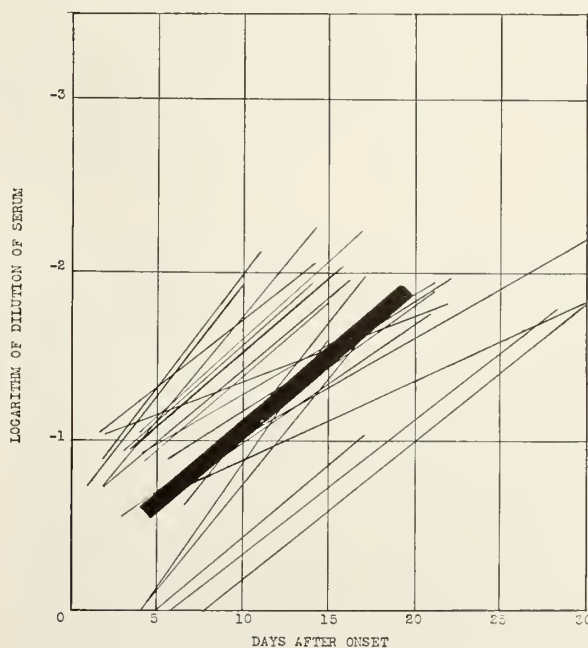


Fig. 3. Neutralizing antibody titers of acute phase and convalescent phase serum from twenty-three cases of epidemic influenza. Heavy line indicates mean dilution of serum neutralizing approximately 3,000 50 per cent mortality doses of type A influenza virus (PR8 strain).

pensions from mice infected with influenza B virus (Lee strain)<sup>13</sup> were used as antigens. A uniform rise in neutralizing and complement-fixing antibodies to the type A virus occurred during recovery of all five patients. No increase in complement-fixing antibodies to the type B virus was demonstrated.

Figure 3 shows the results of neutralization tests with the type A strain of virus on acute and convalescent phase serum specimens from twenty-three selected cases. All specimens of serum taken during recovery showed an increase in neutralizing antibodies as compared with the acute phase sera. The mean titer of acute phase serum was 1:5 while the mean titer of the convalescent phase serum was 1:90. The uniformity of the serological results warrants the conclusion that the cases thus far studied represent infection with influenza A virus.

#### DISCUSSION

The clinical symptoms accompanying the early stages of epidemic influenza are common to numerous other upper respiratory infections. Because of the difficulty in differentiating these diseases clinically it is necessary that definite laboratory procedures be established to aid in early diagnosis. In large outbreaks influenza virus has been recovered with relative ease but frequent reports show that this is not true where sporadic cases have been reported. For this reason the development of accurate laboratory methods for establishing infection with influenza virus has marked a great advance in the study of this disease. It is not possible, however, to make a laboratory diagnosis of epidemic influenza during the acute phase of the disease. It is hoped that such a method will become available in the future. The methods that are now available necessitate study of serum taken from patients during recovery to ascertain whether specific virus neutralizing or complement-fixing antibodies have developed. It becomes necessary to compare these laboratory findings and those obtained with specimens procured during the acute stage of the disease when such antibodies are present in small quantities or not at all.

The very nature of the disease gives rise to possible faulty diagnosis. Since it so closely resembles other upper respiratory infections and since mild influenza occurs endemically during certain seasons of the year, the presence of an epidemic may color the diagnostic viewpoint. The purpose of this investigation has been to attempt to correlate laboratory, clinical and epidemiological findings to enable the practicing physician to establish definite clinical criteria for diagnosis of influenza.

Comparison of past influenza outbreaks in the United States reveals a striking similarity in epidemiology. The disease invariably begins at one coast and spreads rapidly (within a few weeks) in a fanlike movement throughout the country, frequently reaching a peak in one section after it

has almost subsided in another. It seems obvious, then, that it is spread through direct contact and that it is "imported" into this country from other places. Virulence of the disease varies in different outbreaks but a single epidemic is usually uniformly mild or severe and clinical symptoms are remarkably alike in various sections. The epidemic under investigation was mild in virulence; it first appeared on the West Coast in September (apparently brought from Hawaii) and spread eastward, reaching St. Louis in December and arriving on the East Coast in January.

The laboratory methods now available for the study of epidemic influenza, and used in this investigation, have indicated that the cases so far studied resulted from infection with the type A strain of influenza virus. The completed study, which will be published at a later date, will include clinical, laboratory and epidemiological analyses on a series of cases of acute upper respiratory infections including epidemic influenza. It is hoped that this study will lead to a more precise method of dissociating true epidemic influenza from the mosaic of other respiratory infections.

#### CONCLUSIONS

1. Influenza, because of its similarity to other respiratory infections, presents a diagnostic problem.
2. The epidemic under investigation followed previous outbreaks in its epidemiological aspects, beginning on the West Coast and rapidly spreading eastward.
3. The present epidemic has been proved to be caused by influenza A virus.
4. It is hoped that correlation of clinical, epidemiological and laboratory data, in the manner employed in this study, will facilitate ease of clinical differentiation between true influenza and other respiratory infections.

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## DWARFISM

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Dwarfism is a condition in which the body is abnormally undersized in comparison with the average normal variations for size of a particular species at a definite age. Smallness of a subgroup does not mean dwarfism; for instance, Shetland ponies and Clydesdales are horses, but for Shetland ponies to be small and for Clydesdales to be large is an inherited characteristic. If a Clydesdale colt never grows beyond the size of a Shetland pony, then it is a dwarf; if a Shetland pony grows to the size of a Clydesdale, then it is a giant. There are dwarfs among all living things, both plants and animals. Dwarfism in other animals may be due to the same conditions which cause its occurrence in man. Obviously, dwarfism can occur only in pre-adult life while growth is possible.

The growth cycle arbitrarily may be divided into periods. The first of these divisions is prenatal and postnatal. Prenatal growth and development may be further subdivided into two phases, the embryonic and the fetal. The embryonic period begins with fertilization of the ovum and extends to the end of the third month. Fetal life is from the beginning of the fourth month to birth. During prenatal existence the organism is vegetative, that is, all function is involuntary or unconscious and sustenance is supplied by the nourishing fluids of the mother; in other words, there is no independence of existence or action.

Postnatal growth and development may be divided into the following periods: infancy, from birth to age 2 years; childhood, from age 2 to 12 or 13 years and, adolescence, from 12 or 13 years to adult age. Growth in height ceases at about 18 or 19 years of age due to union of the cartilagenous caps on the ends of the long bones with the shafts. After this union of the epiphyses and the diaphyses occurs, the skeleton becomes heavier until about the age of 22 to 25 years; in other words, the skeletal framework of the body is then complete and the youth has arrived at full growth maturity. Any changes in bodily configuration after attainment of maturity result chiefly from increased muscular development as a result of work or exercise or to deposit of fat in the soft tissues. Injuries or disease processes may alter the structure of bone. Such bony changes, while comparatively rare, can occur when certain tumors of the anterior pituitary gland develop with the production of excessive amounts of growth hormone causing overgrowth

of all tissues and massive features. Excessive secretion of the parathyroid glands may cause removal of calcium from the bones so that they are soft and brittle and fracture easily and frequently.

There are various types of dwarfs that may be classified according to the causative factors. In some, dwarfism results from insufficient secretion of certain ductless glands such as the anterior pituitary, the thyroid, the adrenals and the pineal; or there may be a combination of these glands underfunctioning. Dwarfism may be caused by nutritional disturbance, vitamin deficiencies and by disease processes which interfere with proper development of cartilage and bone or all tissues of the body. Dwarfism may be classified as nonendocrine and endocrine.

### NONENDOCRINE DWARFISM

#### ACHONDROPLASTIC DWARFISM

Perhaps everyone has at sometime seen an achondroplastic dwarf. Such dwarfs have a normal body with very short extremities. The condition is relatively rare.

There are several theories regarding the cause of achondroplastic dwarfism. At one time it was thought to be a type of rickets or cretinism, both of which cause delayed growth and dwarfism. As a result of the discoveries of modern medical sciences, it is now known that rickets is due to absence of sunlight and its ultraviolet rays and vitamin D. Cretinism results from underfunction of the thyroid gland in prenatal life and this hypofunction continues in postnatal life. Apparently neither of these conditions is related to achondroplastic dwarfism. Heredity and prenatal factors seem to exercise a dominant role. There may be several cases in one family and instances are known in which the children of achondroplastic dwarfs were achondroplastic. There is an authentic report of six typical cases in three generations, all of whom were males.

The condition has its onset in early fetal life with the first development of cartilage. It mani-



Fig. 1. Achondroplastic dwarfs. (a) Father; (b) son; (c) daughter.

fects itself chiefly in the bones of the extremities because these bones normally grow rather rapidly in length. However, all bones are involved to some extent. Growth of the long bones occurs in the cartilagenous caps and with the abnormal and delayed growth which occurs in these caps the long bones remain short resulting in a dwarfed appearance. The head appears abnormally large, which may be real as well as apparent. Since the trunk of these people is approximately normal in size and proportion and the extremities are exceedingly short, their appearance is a bit grotesque. The muscles of the extremities seem abnormally developed, but this is due to the shortness and thickness of the extremities; their physical strength is not increased.

Most cases die before birth and the majority of those living at birth succumb in early infancy. Those who survive the first year of life usually have a normal life expectancy and develop a normal mentality.

#### RACHITIC DWARFISM (RICKETS)

Someone has said, "Rickets is a part of the price paid by humanity for civilization." It is rare among races who live close to nature and it does not occur in wild animals except when they are removed from their natural habitat. It is almost unknown among African natives when in their natural environment but when they are removed to so-called civilized countries, especially crowded cities, the Negro is unusually susceptible. It is found less frequently in the tropics because the warm weather throughout the year permits exposure of children to sunlight. It is also rare in the Arctic and regions where much of the food consumed consists of fish and fish oils which supply vitamin D.

Recognition of the disease occurred about 1640 when the Royal Society of London received many reports from different parts of England which indicated the appearance of a new disease. Soon afterward it was recognized on the Continent. It might have been present long before it was reported; again, the growth of cities which changed masses of the population from rural to urban may have been having its first effect.

Rickets usually occurs in infancy and early childhood (to the third year). The highest percentage of cases become manifest between November and May, due to the decreased amount of sunlight. Formerly, it was thought by many that overcrowding in tenements and poor hygiene were causes of rickets. These conditions are conducive to rickets, chiefly because of the lack of sunlight and because people who live under these circumstances may be poor and not have a sufficient amount of proper foods. It is not believed that heredity plays any part in the development of rickets. When existing in a mother and child, the relationship is probably that the same predisposing factors, such as living conditions and habits, were similar for both generations. Marked vitamin D deficiency in adults, es-

pecially in women during pregnancy and lactation, causes a loss of calcium from the bones, which become soft and even pliable. This condition in adults is simply adult rickets. If the mother is deficient in vitamin D during pregnancy, she may develop loss of calcium from her bones and it is conceivable that the newborn child may have rickets at birth. This is only one of the reasons why mothers should have constant supervision by their physician during this period.

Two French physicians, Guerin in 1837 and Trousseau in 1848, were the first to recognize a faulty dietary as the cause of rickets. Later a disturbance of calcium and phosphorus metabolism was noted as a part of the picture of rickets.

Cod liver oil has been used from time immemorial as a folk remedy on the coasts of England, Holland and France for the cure of rickets. The use of this oil was based upon the observation that fish oils were beneficial, but the reason was not known. About 1919 it was announced from experimental observation that rickets resulted from a deficiency of a fat soluble vitamin. At first it was thought that this was vitamin A, which influences normal growth of body tissues and increases resistance to infectious processes. Later research proved that the deficient vitamin was D.

Vitamin D is instrumental, along with other factors, in regulating the metabolism of calcium and phosphorus in the body. Calcium and phosphorus are two essential elements, especially necessary for the proper development of the bones and teeth. If the deposition of calcium in the bones and teeth is insufficient, they are soft. The long bones bend easily and the teeth decay and do not retain fillings.

All are acquainted with the old slogan, "A clean tooth never decays." It now is known that if a clean tooth does not have proper nourishment it will decay. A competent authority states, "The administration of vitamin A and vitamin D concentrates reduced the number of dental cavities to one-tenth the number found in a similar group not receiving the additional vitamins. In the teen ages the differences were still greater."

Lest one become too enthusiastic regarding the efficacy of all vitamins, it might be well to heed the statement of the Council on Pharmacy and Chemistry and the Council on Foods of the American Medical Association as given in the *Journal of the American Medical Association*, August 12, 1939, page 592. "There is clinical evidence to justify the statement that vitamin D plays an important role in tooth formation and maintenance of tooth structure, but there is no warrant for the claim that adequate vitamin D intake will insure normal tooth structure or that adequate vitamin D intake will prevent dental caries." This is true, for development and maintenance of normal tooth structure can be and is influenced by many other factors and occurrences to which the body is subjected.

A survey which included investigation of 349 infants during the month of October in Toronto, Canada, showed that 17.4 per cent, or approxi-

mately one in every six, gave evidence of rickets as revealed by roentgen ray studies. A report from New Orleans gave a prevalence of mild rickets of about 45 per cent in children 3 years of age or less. An investigation of 1,000 children in Memphis, Tennessee, 500 of whom were white and 500 Negro, showed the incidence of rickets was 49.8 per cent in the white and 87.6 per cent in the Negroes.

#### SYMPTOMS

The onset of rickets is insidious. The first symptoms noticed may be listlessness, irritability and profuse sweating of the head and neck. The child does not want to be handled because movement is painful. The muscles may be relaxed and the child may be unable to stand, walk or even sit up. At this stage roentgen ray examination will show changes in the bones.

The fundamental feature of rickets is a disturbance of calcium and phosphorus metabolism with consequent defective growth and development of bone. As a result, the bones are soft and various deformities may occur such as bowlegs, knock knees, enlargement of any of the joints, spinal curvature and pigeon breast with beading of the ends of the ribs where they unite with the sternum, known as the "rachitic rosary." The bones of the skull may be soft and bend upon pressure and there will be late closure of the openings in the skull, a condition which is known to all who have had contact with young babies. The forehead may bulge. This disturbance of bony growth may result in rachitic dwarfism. There are other signs and symptoms which need not be enumerated.

It has been found that when ergosterol, cholesterol and other sterols, which are compounds related to fats, are exposed to ultraviolet rays or sunlight, they develop properties which render them capable of preventing or curing rickets. Previous to irradiation, chemically pure ergosterol and cholesterol do not contain these properties. The superficial layers of the skin contain ergosterol and cholesterol; therefore, when the skin is ex-

posed to ultraviolet rays or sunlight, the ergosterol and cholesterol in the skin develop properties characteristic of vitamin D. This explains why sunlight is beneficial in rickets.

The principal natural sources of vitamin D are cod liver oil, halibut liver oil, salmon and sardine oil, beef fat, egg yolk, butter, cream and whole milk.

It has been discovered that when milk is irradiated, it becomes highly potent as a carrier of vitamin D. Many other foods may be similarly enriched by irradiation. Another method for producing milk rich in vitamin D is to feed milch cows irradiated yeast from which the vitamin D is transmuted from the feed to the milk.

#### ENDOCRINE DWARFISM

The majority of cases of endocrine (glandular) dwarfism are usually the result of insufficient secretion of specific hormones which influence growth and development. However, there are a few exceptions to this rule which will be described under gonadal (sex) and pineal gland disorders in which the disturbance is due to precocious function. The disturbances that produce dwarfism necessarily must occur early in life. They must have their incipency before birth or in infancy and childhood. If glandular function is normal to the beginning of adolescence, the probability that further growth will be arrested to an extent that will be very noticeable becomes increasingly less. This is obvious, for the nearer the adolescent approaches normal maturity without any untoward happening the less is the possibility of change in growth structure. This suggests the advisability of careful observation of the individual through the growth period by the physician.

The ductless glands that are particularly involved in the production of dwarfism are the anterior pituitary, the gonads (sex glands), the thyroid and the pineal.

The anterior pituitary gland has been removed experimentally from very young animals resulting in cessation of growth and dwarfism. In other experiments pituitary glands were removed from immature rats and growth was maintained at normal by implanting pituitary glands from normal animals into their bodies. These implants usually are made under the skin or into the muscle. Gigantism also has been produced in rats by injections of pituitary extracts. All these experiments prove that the anterior pituitary gland secretes a substance (hormone) that stimulates growth.

#### PITUITARY DWARFISM (INFANTILISM)

Infantilism is a condition characterized by failure of somatic (bodily) and sexual development. Infantilism properly includes all degrees of arrested development due to a variety of causes, both glandular and nonglandular. Pituitary dwarfism is the result of insufficient secretion of growth stimulating hormone from the anterior pituitary gland.



Fig. 2. Child with rickets. Note deformity of the bones due to loss of calcium resulting from insufficient vitamin D. (From Meakins: Practice of Medicine.)

Usually these cases also have markedly decreased or absent gonadotropic (sex-stimulating) hormone with failure of normal development of the secondary sex characteristics. This delay may be noticeable in early childhood and at puberty the changes that normally occur may be greatly retarded or absent. Since all body cells depend upon growth hormone stimulation, a decrease in the amount of this hormone will affect all cells. Development is arrested uniformly so that the relative proportions are preserved. The patient looks like a small man or woman and may appear frail and weak. The facial features are childlike. Because the larynx which contains the vocal cords does not develop, the voice remains high pitched. The mentality is usually normal.

As the child grows older, it becomes conscious of its failure to grow and develop as do other children of the same age and serious problems arise. The boy or girl cannot compete successfully in athletic activities with others of equal age because of the physical handicaps. Attendance at social functions is increasingly restricted for youth desires to feel big, strong, attractive and important, none of which can be instinctively commanded by a childlike appearing person. As a result of these physical handicaps, there is danger of one or more inferiority complexes developing. Inferiority complexes may be acquired at any time in life but when they are acquired in childhood and youth and are allowed to persist they are difficult to overcome. An educational inferiority complex can be conquered by attaining an education. A social inferiority complex can be mastered if it exists only in the mind. Almost all such complexes can be eliminated if there is a will to do so. Nothing is impossible of attainment if it is reasonable and if one has sufficient desire to accomplish and a willingness to put forth the necessary effort by sacrifice for success.

Physical handicaps are more difficult to surmount. Since infantilism, if recognized early, responds in many instances to proper care, it should not be neglected. The earlier treatment to assist nature is instituted, the more hopeful one can be that beneficial results will be obtained.

Some children having pituitary infantilism (dwarfism) begin to grow rather rapidly when they reach the age of 15 or 16 years so that in a few years they are of normal size and development. This is because the anterior pituitary gland, which seemingly had been dormant, assumed normal function. If this assumption of normal anterior pituitary function occurs while the epiphyses are open, the boy or girl can grow. The longer the period of delayed growth exists, the less likely it is that the patient will attain completely normal growth and development. If growth is delayed to the age of 18 or more years, the probability that growth will occur spontaneously is increasingly doubtful.

It does not seem to be good policy to neglect underdeveloped children in the hope that fate will be kind at the last moment. It is possible to know rather definitely the cause of these conditions and the probability (prognosis) for relief.

Figure 3 compares boy with normal plus function within normal limits with a typical case (white boy) of pure anterior lobe pituitary infantilism in a boy 15 years, 7 months of age whose height was 52 inches (normal 61.1 to 65.3 inches) and whose weight was 51 pounds (normal 91.6 to 116.2 pounds). Note the absence of development of the secondary sex characters due to insufficient sex stimulating hormone of the anterior lobe pituitary. The sella turcica was the incarcerated type measuring 4.5 by 5.0 mm. (normal 10 by 12 to 15 mm.). Basal metabolism was plus 23 per cent. (This basal reading can be disregarded for it was calculated from tables based upon normal size for age.) Thyroid function was normal as evidenced by intelligence and absence of any signs or symptoms of hyperthyroidism or hypothyroidism. The infantilism in this case resulted from incarceration of the pituitary gland, thereby inhibiting normal growth and function of the anterior lobe.

On treatment this boy developed into a self-supporting man and at age 25 was killed while driving an automobile.

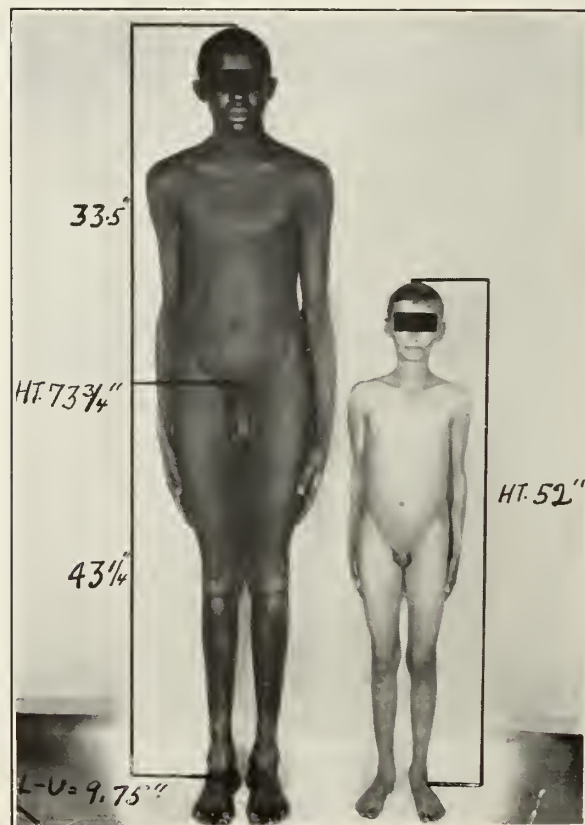


Fig. 3. Pituitary dwarfism in boy aged 15 years, 7 months, compared with a normal boy having normal plus function within normal limits.

## HEREDITARY SMALLNESS

There is another growth condition characterized by very small stature which is known as microsomia or small body. At first glance one would suspect pituitary dwarfism or infantilism.

The smaller girl shown in figure 4 is one of these persons. The average normal weight for an infant 12 months old is 18 to 22 pounds and the average normal height is 28 to 30 inches. This little girl is 3½ years old, her weight is 19 pounds and her height is 32 inches. A comparison of these figures shows that she is the size of a 1 year old infant. Her smallness of stature is an inherited characteristic which probably is according to the Mendelian Law of inheritance. Her father is 5 feet 9 inches tall and her mother is very small and weighs 75 pounds. The maternal grandfather is 6 feet 2 inches tall and the maternal grandmother is small and weighs 75 pounds. Her mother has three sisters, one of whom is small and weighs approximately 75 pounds and the other two are above the average normal for women (5 feet 4 inches), being 5 feet 7 inches and 5 feet 8 inches, respectively.

For this child to be small is normal because she, her mother, her aunt and her grandmother are very small and are sexually normal. Infantile persons are not sexually normal. She is alert mentally and because of her small size and smartness, one has the impression that she is precocious or that he is in the presence of an animated doll. There is no apparent glandular disturbance present and since she is normal she needs no treatment.



Fig. 4. Case of microsomia (hereditary smallness) aged 3½ years compared with a cousin of the same age, both of whom are normal.

## GONADAL DWARFISM

Paradoxical as it may seem, gonadal dwarfism is not due to insufficient glandular function but to precocious function. It is recognized that onset of sex function influences closure of the epiphyses (cartilagenous caps of the long bones). If onset of puberty is late, the epiphyses will remain open longer and in the presence of a normal amount of growth hormone, the boy or girl probably will be tall. There are some variations to this rule based upon hereditary influences. If onset of puberty is early, the cartilagenous caps will unite with the shafts of the long bones correspondingly early and the earlier this occurs the shorter will be the extremities, and consequently the height of the individual.

Figure 5 is that of a woman aged 34 who is dwarfed. She is 4 feet 6 inches tall (average normal, 5 feet 4 inches). The lower extremities are eight inches shorter than the combined measurements of the trunk and head. The arms are correspondingly short.

For some unknown reason the anterior pituitary gland began to secrete the sex stimulating factor early in life. The onset of sex function in this woman began in infancy at age 1 year. The sex cycle has always been regular and normal since onset with the result that the epiphyses closed very early, precluding further growth in length of the long bones and the extremities are exceedingly short and the patient is dwarfed. The trunk and head are approximately normal in size. This patient is above the average in intelligence and is otherwise normal.



Fig. 5. Short stature resulting from precocious puberty. Note short extremities. Normally, the extremities should be equal or greater in length than the torso and head. (Courtesy of Dr. Ralph Kinsella.)

## THYROID DWARFISM (CRETINISM)

The thyroid gland normally is situated in the lower and front part of the neck and surrounds the trachea on three sides. When the thyroid gland is enlarged it is referred to as a goiter. A goiter, therefore, is not a new growth but is simply an enlargement of the thyroid due to some disturbance in the gland. All enlargements of the thyroid gland are not necessarily serious but they usually indicate some abnormality of function.

The thyroid gland may be compared to the accelerator of an automobile. Thyroxin, which is the hormone or internal secretion of the thyroid gland, in a large measure controls the chemical activity or combustion processes of all body cells. If the gland is too active, an excess amount of thyroxin is released into the blood and all the combustion processes of the body are accelerated. The heart becomes rapid, the respiratory rate is quicker, body heat is increased, perspiration flows freely, the appetite is increased and the patient loses weight. The destructive processes in the body are greater than the constructive. These are all expressions of excessive activity of the thyroid gland and can be measured by several tests, chief among which is a determination of metabolic rate (degree of chemical changes occurring in the body).

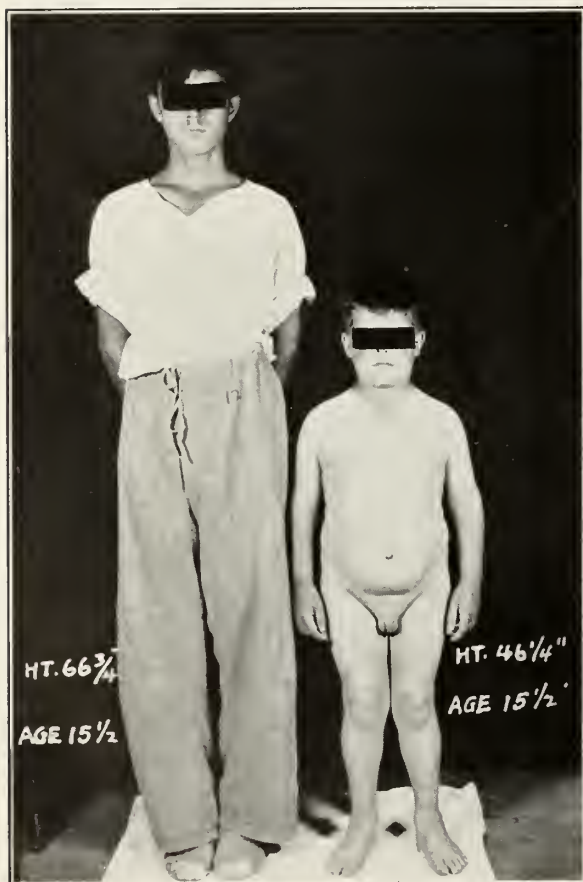


Fig. 6. Cretin aged 15½ years compared with a normal boy of the same age.

If the thyroid gland does not secrete sufficient thyroxin, the combustion processes of the body are markedly slowed. The heart action is slow, the body temperature may be subnormal, the skin and hair dry, the appetite is decreased, the reactions of the patient are sluggish and there is decreased memory and ability for mental concentration. Energy production is at a low ebb.

Underfunction of the thyroid gland occurring in prenatal life results in the condition known as cretinism.

Cretinism usually is recognizable during the first year of life. Many parents seem rather proud if the baby is large and weighs 9 or 10 pounds at birth, but this may be the first evidence of cretinism. A normal baby should weigh approximately 7 to 7½ pounds at birth. Eruption of the baby teeth may be delayed. The two lower central incisors should appear at about 6 months and at the end of 2 years, twenty teeth should be present. A normal baby usually talks and walks at 12 to 14 months. If any of these occurrences are markedly delayed, underfunction of the thyroid or cretinism should be suspected. Other evidences of this condition are gain in weight and not in stature, the face may look bloated and have a pale, waxy, sallow tint, the eyelids may be puffy and the nasal bridge low with thick flaring nostrils. The lips are thick, the tongue is enlarged and may hang out of the mouth with dribbling of saliva. The hands and feet are thick and pudgy, the abdomen is full and bloated and the skin and hair are dry. If roentgenograms are made of the bones, marked delay in growth and development will be found.

The principal treatment of cretinism is thyroid medication, but this always should be supervised by a physician. Since cretinism has its incipency in prenatal life, the retardation of development at birth is of such serious consequence that complete restoration of the individual to normal usually cannot be obtained.

If cretins are untreated (and many who are treated) they are dwarfs, have retarded mentality, develop a clownlike intelligence, have poor contact with other children, are good humored and preserve a perpetual childhood.

## INFANTILE HYPOTHYROIDISM

There is another type of insufficient thyroid function which has its onset immediately after birth or during the first year of life; this is known as infantile hypothyroidism and is not of such serious consequence, if recognized early, as is cretinism. Both of these conditions result in retardation of growth if untreated.

Infants who have had normal growth and thyroid function to birth and who develop insufficient thyroid function afterward may have the appearance of cretins but, because they had normally developed bodies when born, they respond to thyroid treatment and may be caused to grow into normal children and adults.

The condition of the boy shown in figure 7 was not recognized as being due to insufficient thyroid secretion until he was  $9\frac{1}{2}$  years old. At that time he was undersized and fat, the teeth were badly formed, misplaced, decayed and some were unerupted. He could not dress himself, only mumbled a few words and was imbecilic. Sexual development was retarded.

A diagnosis of infantile hypothyroidism was made and thyroid medication was administered. Within eighteen months he grew  $2\frac{1}{2}$  inches in height and lost weight to normal. He could talk plainly and advanced to the third grade in school.

Within five and one half years from onset of treatment, he attained normal stature for age and finished the eighth grade in school, having made up two and one half years work. He has developed into a normal man, now aged 25, and has been in a C. C. C. camp for several years and conducts himself normally.

Had this boy not been treated correctly, he would have remained an imbecilic thyroid dwarf.

#### MONGOLOID DWARFISM

Mongolism is a condition recognizable in most cases at birth and is characterized by generalized retardation of skeletal, body and mental development. The word mongolism is used to define this condition because of the facial resemblance of these children to the Kalmuck and Tartar type of features. In infancy and early childhood these children frequently are mistaken for cretins.

The inhibiting influences which produce this type of individual are probably operative in embryonic life. When one of these children appears in a family, the parents usually are greatly dis-

tressed because all parents desire to have perfectly normal children and are embarrassed because they feel that others may think there is bad inheritance in the family. Heredity plays no part as a causative factor in this condition. If this fact can be impressed upon the parents and the public, then it will be a source of great comfort for all concerned. In almost all instances, the parents of these children are of average or above average intelligence. Usually there are other children in the family and these children are perfectly normal. There is one instance of a young couple, the father a graduate of Princeton University and the mother



Fig. 7. (a) Infantile hypothyroidism before treatment, patient aged  $9\frac{1}{2}$  years. (b) Improvement in same boy after eighteen months of treatment. (c) Note normal appearance of this boy after five years of glandular treatment.

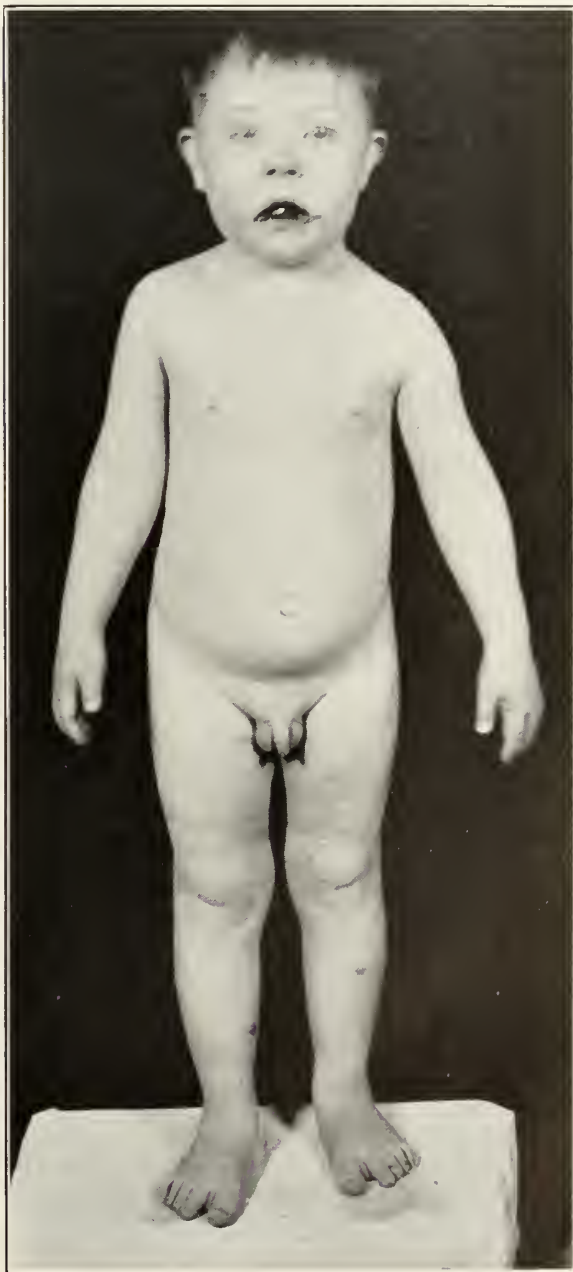


Fig. 8. Mongoloid boy 8 years of age. Note expressionless face.

a graduate of Vassar College, whose first child was a mongoloid. They were greatly disturbed lest any other children would be mongoloids. The possibility that any future children in this family would be mongoloids is extremely remote for mongolism apparently has nothing to do with heredity. Evidently this unfortunate happening is due to something going wrong in the very earliest stages of embryonic development, perhaps soon after union of the germinal elements, the ovum and the spermatozoan.

The similarity of appearances of these cases is most striking. The physiognomy shows great similarity to that of the Mongolian races. The skull is small and round, the cheek bones are high and the forehead may be low and the back of the head is usually flat. The mouth is small and open, eruption of the teeth is delayed and they are usually badly formed and irregularly placed. The tongue is not necessarily large but is usually dry and of the geographical type, having deep irregular lines on the surface. The eyes are usually slanting. The nose is small and button-like, the bridge is sunken and the nostrils are tilted upward and stand open so that one can look directly into them. The ears may be small and stand back or they may be cupped and flaring.

The face is expressionless and vacant only in the first year of life. Afterward it is gay, comical and imbecilic. Mental development is delayed and may be of any degree, but never above imbecility; the intelligence quotient never develops beyond that for a child of 3 years of age. These children are lively and their attention is fixed with difficulty. They show considerable imitability and pose readily. They are very affectionate.

#### PINEAL DWARFISM

The pineal gland is situated near the center of the brain and is usually the size of a small pea. Very little is known regarding its function. Questionable clinical evidence exists that disturbance of this gland may cause precocious sexual development with early closure of the cartilagenous caps on the long bones. This causes short extremities and a dwarfed appearance. A few years ago, experimental evidence in pineal treated rats seemed to substantiate this clinical theory, but the knowledge is still inconclusive. Fortunately, the condition is of extremely rare occurrence.

401 Humboldt Building.

#### ERUPTION DUE TO WRIST WATCH STRAP

A case in which a wrist watch strap which had been worn continuously for two months with no evidence of sensitivity suddenly caused a skin inflammation is reported by W. W. Bauer, M.D., Chicago, in *The Journal of the American Medical Association* for February 1.

The strap was made of a new synthetic, flexible, glass-like substance and was responsible for intense itching and redness of the skin in contact with the watch band, followed by a definite eruption.

## CERVICAL CARCINOMA ASSOCIATED WITH PREGNANCY AT FULL TERM

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AND

F. GREGG THOMPSON, JR., M.D.

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This case is reported because it presents a rare condition, carcinoma of the cervix at full term pregnancy, and includes the subsequent outcome of both baby and mother.

The incidence of carcinoma of the cervix in the pregnant woman has been given as between .004 to 2.5 per cent. Although the age incidences of carcinoma and of pregnancy do not correspond, one should examine carefully cases that might be diagnosed wrongly as threatened abortion or placenta previa.

Carcinoma of the cervix endangers pregnancy and may cause abortion and hemorrhage, rupture of the lower uterine segment and sepsis. The prognosis is grave. Several cases have been reported, in which diagnoses of cervical carcinoma were made during pregnancy, which were treated with radium, later delivered and operated upon and no trace of carcinoma found. One cannot help but wonder if these were carcinoma or if pregnancy influences benign cells in such a manner that they resemble malignant cells.

Pregnancy stimulates the growth of carcinoma of the cervix and the symptoms of carcinoma of the cervix simulate those of some complications of pregnancy (threatened abortion, placenta previa). The patient should have the benefit of a complete pelvic examination. If an examination is made and a lesion found, a biopsy should be done. The diagnosis of advanced cases is made easily.

The treatment is influenced by (1) the extent of the growth and (2) the period of gestation. The plan of treatment and its ultimate outcome as to both mother and baby must be explained to the patient and her decision must denote the type of treatment. Operable cases (early pregnancy) should have total extirpation of the uterus followed by radium. If inoperable in early pregnancy, pregnancy is allowed to continue to the period of viability and then a cesarean section is done with removal of all the growth possible, followed by radium. If found during the second trimester of pregnancy and the growth of the tumor seems to be slow, radium applications may be used and pregnancy allowed to continue until the fetus is viable. Then cesarean section and total extirpation are performed. Since the effects of radiation on the fetus during pregnancy cause fetal deformities, abnormalities and monstrosities, some authors advocate the use of radium and deep roentgen ray only after pregnancy has been terminated one way or another.

A woman with carcinoma of the cervix should not be allowed to go through labor and deliver via vagina. Deep cervical tears, hemorrhage and in-

fection will result. In all cases reported there seems to have been an added risk to the baby.

Carcinoma of the cervix diagnosed during labor is usually treated by cesarean section and subtotal hysterectomy (or Parro section) depending upon the extension of the carcinoma. Radium and deep roentgen ray are used later.

In sarcoma or carcinoma there is no recorded instance of secondary involvement of either the placenta or fetus. (H. L. Baer.)

Case reports of carcinoma of the cervix complicating pregnancy usually omit the subsequent health of the patient and one is inclined to wonder just what was the outcome. Most of the cases were discovered during early pregnancy and so managed as to avoid severe complications and most of them received some form of treatment before the onset of labor.

#### CASE REPORT

This patient, aged 30, was examined by us for the first time when she was admitted to the hospital on November 23, 1936, and was diagnosed as having placenta previa at term. She had been bleeding for the last twenty-four hours and complained of pain, or more a discomfort, in the lower abdomen. Her last regular menstrual period was February 1936. She flowed intermittently during March 1936 and spotted for one day on about April 15, August 31 and September 1, 1936. She had been married fourteen years and had seven children, the youngest 2 years old. She had had the usual childhood diseases, no operations and there was no history of carcinoma in the family.

On examination the fetus was found to be in cephalic presentation, left occipito-anterior position, FHT 140. The abdomen was the size of full term pregnancy. On vaginal examination the cervix was found to be firm and nodular with a firm mass which completely encircled the cervix. The cervix was about 5 or 6 cm. in diameter and 4 or 5 cm. long. Speculum examination disclosed the cervix of uniform color with little variation from light to deep purple. The cervix bled when touched with gauze or instrument but there was no bleeding from the os. There were small, yellowish tubercles throughout the cervix. Diagnosis was carcinoma of the cervix complicating full term pregnancy.

The problem in this case was to deliver the fetus and spare the patient the primary mortality. Delivery via vagina was impossible. A cesarean section and panhysterectomy were done. The left ureter was completely surrounded with carcinoma and obstructed. It was ligated with silk and removed together with the mass surrounding it. A blood transfusion was given while the patient was on the operating table. The next day the

patient complained of a sudden, stabbing pain in the right chest and breathlessness. The pulse rate was from 140 to 150. Pulmonary embolism was possible but in spite of this the patient was given 600 cc. of blood by direct method and intranasal oxygen was given. She gradually recovered and was discharged from the hospital December 18, 1936, deep roentgen ray to be given at the clinic. There was slight drainage from the wound on dismissal from the hospital.

The baby died within twenty-four hours of primary pulmonary atelectasis. This was substantiated by autopsy. Horseshoe kidney also was found at autopsy.

The placenta was not sent to the laboratory for pathological report. The pathologist's report of the uterus and cervix removed at operation follows.

**Gross Examination.**—The uterus measured 18 by 12 by 7 cm., was smooth, light red, uniform, moderately firm with a cleanly evacuated cavity except for a slight amount of reddish roughening on the posterior wall. The cervix was enlarged and firm with pouting cervical lips involved in granular tissue change which extended for 3 cm., along the cervical wall and outward in the left paracervical tissue, appearing as firm white fibrous granular material which incorporated and almost obliterated the left ureter for 3.5 cm. The lateral mass measured roughly 4 by 2.5 by 2.5 cm.

**Histological Pathology.**—Microsections of uterine wall showed peculiar hyperplasia and metaplasia of the muscle cells and connective tissue cells. Decidual-like change was considerable and marked vascularity occasionally was associated with hemorrhage, particularly on the surface portion. A segment of cervix showed marked downgrowth of the stratified surface epithelium. Beneath this there was an extensive infiltrating growth of squamous epithelium, frequently highly differentiated though rarely tending to pass into grade III. There was pseudo characterization with attempt at pearl formation. Centrally there often was necrosis and liquefaction. Malignant cells were found formed in a huge mass as part of a firm thrombus of a venous structure. In some areas the malignant growth had undergone acinar structures, always returning, however, to the original squamous form. No segment of the ureter was identified.

The pathological diagnosis was squamous carcinoma of the cervix and malignant thrombosis of parametrial vessels.

The patient was readmitted to the hospital on March 3, 1937, complaining of pain and burning on urination and pain in the region of the right kidney. Temperature and pulse were elevated. Catheter specimen showed 3 plus albumin, pus cells and red blood cells. Cystoscopy on March 16, 1937, showed malignant growth of the bladder. She was made comfortable under treatment and dismissed from the hospital on March 17, 1937.

She tried faith healers but returned to the hospital on May 23, 1937, complaining of a constant dribbling from the vagina and considerable vaginal hemorrhage. On speculum examination the vagina was found to be filled with light amber solution (urine). The vaginal wall was smooth. A probe gently inserted into a pocket about 2 cm. in diameter leading toward the left adnexa met with firm resistance and bleeding followed. This

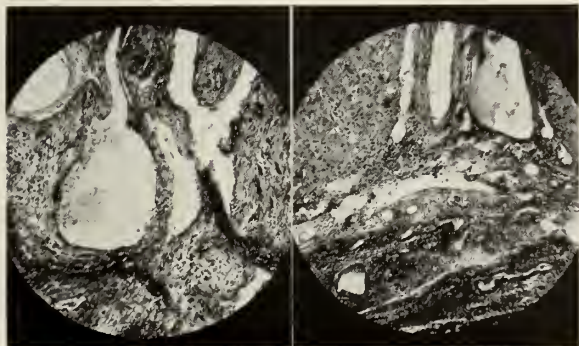


Fig. 1. Photomicrographs of sections of the uterus.

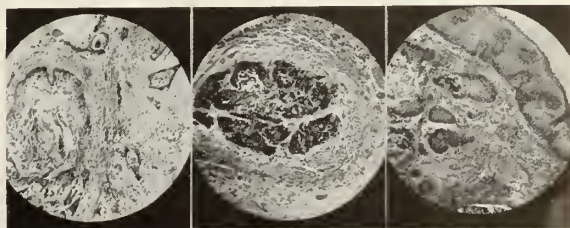


Fig. 2. Photomicrographs of sections of the cervix.

pocket was packed with iodoform gauze. The next day methylene blue solution was instilled into the bladder and the small packing removed. Bleeding followed but no methylene blue solution appeared in the vagina. On the following day the patient was given methylene blue tablets and within twelve hours blue colored urine appeared in the vagina, evidently coming through a fistula tract from the left ureter and not from the bladder.

It was impossible to distend the bladder because fluid escaped as rapidly as it was forced in and the urethral orifice could not be found. Intravenous pyelogram showed the outline of both kidneys a little larger than average.

The right kidney pelves and calices were much dilated and cups much blunted. The upper ureter appeared much dilated. The left renal and ureter lumen were not visualized and no stone shadows were shown.

The dangers of an (Coffey) operation were explained to the family and the operation was refused. The patient was dismissed on June 3, 1937, unimproved and was again admitted on July 28, 1937, with hemorrhage from the vagina. She was anemic. Vaginal packing was used to control hemorrhage and two transfusions were given. Vaginal examination revealed blood clots and retained urine in the vagina. Apparently the pocket described previously had increased to such an extent that its depth could not be determined with a long uterine dressing forcep. The vaginal wall appeared smooth. She was dismissed on August 12, 1937, unimproved in general condition.

She was readmitted on November 27, 1937, complaining again of vaginal hemorrhage and passing feces through the vagina. At this time vaginal examination revealed the entire pelvis filled with carcinoma and roentgen ray or surgery of no avail. She was dismissed on November 29, 1937, unimproved.

Last admission was on January 7, 1938, for profuse vaginal hemorrhage. She died four hours after admission to the hospital. Death occurred one year, one month and eleven days after cesarean section and panhysterectomy. Autopsy was refused emphatically.

#### DISCUSSION

The expectant mother should report to her physician or a clinic early in pregnancy. Adequate prenatal care with complete physical examination, especially speculum examination of the cervix, will disclose cervical polyps, eroded crevices and, as in this particular case, carcinoma of the cervix as causes of vaginal bleeding during pregnancy.

Every patient should have the benefit of a speculum examination in determining the cause of vaginal hemorrhage during pregnancy. Such cases are not always threatened abortion or placenta previa.

We now believe that in cases of extensive car-

cinoma of the cervix complicating full term (or near full term) pregnancy the baby should be delivered by cesarean section without removal of the uterus and the carcinoma treated by radium and deep roentgen ray. The patient will live a much more comfortable life and the life expectancy is practically the same. Perhaps this conclusion, based on a review of the literature and personal experience with this one case, is directly opposed to the advancement of medical science but all one may hope to accomplish in such a case is to make the patient comfortable.

#### CONCLUSION

In the English edition (1634) of Ambrose Pare's work, Hippocrates is credited with saying, "such as have hidden, or not ulcerated cancers, had better not to cure them, for healed they quickly dye, not cured, they live the longer." Such was this case.

620 Francis Street.  
825 Charles Street.

### REPAIR OF AN ARTERIOVENOUS FISTULA AND RESULTANT ANEURYSMAL VARIX BETWEEN THE FEMORAL ARTERY AND VEIN

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In civil practice the arteriovenous fistula is a rarity but in military practice it is quite common. Bullet wounds are the most frequent cause. The original injury may be thought insignificant at the time and may be accompanied by little bleeding; more often, however, there is frank hemorrhage. The signs and symptoms may appear immediately or be delayed for years during which time the patient can do strenuous work and exercise with no apparent difficulty. If the condition is allowed to progress and the fistula is of sufficient size, general circulatory symptoms may appear and the typical signs of aortic regurgitation or cardiac decompensation may develop because of the shunting of the blood through the fistula giving accelerated cardiac rate and a high pulse pressure which may be accompanied by any of several types of cardiac murmurs. If the oxygen content is taken, it will show an increase as compared with blood taken from other veins of the body. If the fistula is sustained before the epiphyses close, there will be hypertrophy of the limb because of passive hyperemia and excessive collateral circulation.

Most authorities are of the opinion that corrective surgery for arteriovenous aneurysms of the extremities should not be undertaken for from three to six months after the primary injury. However, emergency situations such as hemorrhage or threatened gangrene arising shortly after the in-

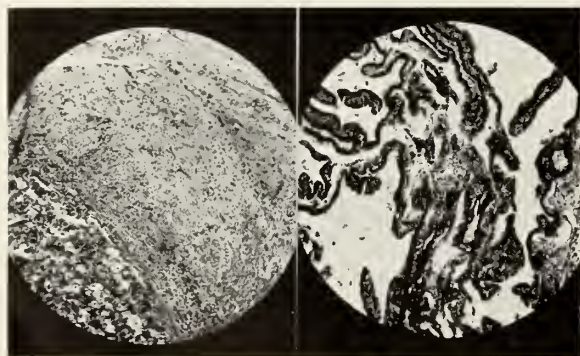


Fig. 3. Photomicrographs of sections of the ovary and tube.

ception of the lesion necessitate operative interference; but it should be postponed if possible. Cases are on record of spontaneous closure, but these are rare indeed. The criteria of surgical interference is the time at which collateral circulation has taken place. This latter may be determined by the Moschowitz-Matas hyperemic test or one of its modifications. "If the collateral circulation is found to be inadequate, physiotherapy may be used to stimulate the formation of new blood channels, although this agent is probably not of much use in such a situation because it is believed that the arteriovenous fistula itself is the strongest of all stimuli for the formation of collateral vessels."

#### CASE REPORT

Case 23445. Wm. G., a 10 year old boy, was shot in the right thigh with a .22 caliber rifle, October 15, 1939. The emergency examination revealed that the bullet had traversed the anterior portion of the thigh and had passed through the femoral area. At that time there was a small hematoma the size of a pecan in this area and there was evidence of profuse bleeding from the wounds as noted on the clothing. A pressure bandage was applied and antitetanus and gas gangrene serums were given. Complete blood counts did not indicate a transfusion. The condition of the patient was considered good enough for him to be discharged from the hospital on October 19, 1939.

On September 3, 1940, the patient was readmitted to the hospital and his mother gave the following history: About two weeks following discharge from the hospital the boy noticed a thrill over the femoral area (described as the sensation of holding the hand on the neck of a purring cat). About the same time while at play he had two fainting spells which were not considered serious enough by the parents to consult a physician. On January 1, 1940, the patient went for a sled ride and on arrival home there was a mass in the femoral area the size of a hen's egg. The right leg was colder to touch than the left one but the patient did not complain of the difference. On January 2, 1940, the patient was put to bed as the right leg had begun to swell from the hip to the ankle. This bed rest was continued for six weeks but the symptoms did not subside and the patient was allowed to resume his activities as previously without any complaints.

**Physical Examination.**—Patient was a fairly well developed and nourished white male lying in bed at ease. Examination showed the head and upper extremities essentially normal. The heart was moderately enlarged as the point of maximum intensity and apex beat were in the fifth interspace 1 centimeter lateral to the mid-clavicular line. No murmurs were heard. On light palpation of the lower right side of the abdomen, a thrill was found from the midline below the umbilicus to the flank down over the right thigh to a point 20 cm. below the femoral area. A definite bruit could be elicited over an area 15 cm. in diameter with the center over the mass. There was a scar measuring  $\frac{1}{2}$  by  $\frac{1}{2}$  centimeters, 4 centimeters below the anterior superior iliac spine on the anteriomedial aspect of the right thigh. Another scar was found on the anteriomedial aspect of the thigh 6 centimeters below the pubis and had the same dimensions as the one on the outside. A line drawn between the two scars bisected the mass in the femoral area. The mass mentioned was the size of a hen's egg and lay just below the inguinal ligament and pulsated with every cardiac action. The right thigh and leg showed definite hypertrophic changes as the circumference of the right thigh in the middle one third was 6.7 centimeters greater than the left thigh at the

same point and 2.5 centimeters greater at the calf of the right leg than of the left. The length of the right leg was 2.5 centimeters longer than the left leg as measured from the anterior superior iliac spine to the internal malleoli. The right knee was 2 centimeters greater in circumference than the left knee at the same level. Hypertrophic changes were noted on the toe nails of the right foot. The interdigital temperature on the right side was 92 F., 5 degrees less than that of the left side. The popliteal and dorsalis pedis arteries did not pulsate and the skin of the right foot and leg was pallid. The blood pressure was 110/60 and the oral temperature 98.8 F.

On September 4, 1940, the patient was taken to the operating room and under gas and ether anesthesia a vertical incision 9 centimeters long was made over the femoral area. A large number of veins were ligated with silk. It was noted that every vein spurted. The inguinal ligament and cribiform fascia were divided and the mass exposed. The mass consisted of a direct communication between the femoral artery and the femoral vein forming an aneurysmal varix on the venous side. The varix lay just above the junction of the saphenous and femoral veins. The fistula was  $2\frac{1}{2}$  centimeters long and 7 millimeters wide. The profundus and the femoral artery below the mass had a faint but definite pulsation. The shanks of two straight, rubber covered, fine Allis forceps were applied, one on the arterial side and the other on the venous side of the fistula. Immediately after clamping the fistula, increased pulsation of the profundus and distal femoral arteries was noted and in three minutes the popliteal and dorsalis pedis arteries could be felt pulsating. Within ten minutes after clamping the fistula the temperature of the right leg could be felt approximating that of the left. The thrill and bruit suddenly ceased with the clamping. The fistula was cut between the clamps and the artery and vein were closed with interrupted mattress sutures of silk No. 00, followed by a running locked stitch of silk No. 00 at 3 millimeter intervals. The aneurysmal varix was reduced in size by "reefing in" with three rows of No. 00 silk to allow closure of the cribiform fascia and inguinal ligament. The skin was closed with dermal sutures without drainage. On leaving the table the patient's condition was good.

On the third postoperative day the patient was allowed in a wheel chair and light exercise was permitted.

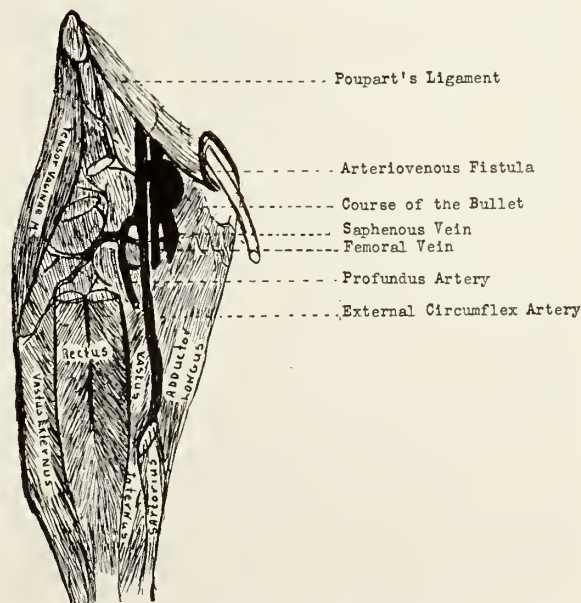


Fig. 1. Surgical anatomy of the arteriovenous fistula.

There was an uneventful recovery and the patient left the hospital on the tenth postoperative day. On September 22, 1940, the patient returned to the hospital for a check-up. He had gained five pounds in weight and was able to walk without any impairment in function. The wound had healed completely and the temperatures of the two limbs were the same.

#### CONCLUSIONS

1. Diagnosis depends on (a) injury, usually by gun shot; (b) presence of thrill and bruit over the affected area; (c) high oxygen content of the blood near the fistula as compared with the blood taken from other veins of the body; (d) injection of thorotrast into the artery.

2. Surgical interference should be delayed, except in emergency cases in which gangrene is imminent, for from three to six months after the primary injury to allow collateral circulation to take place.

3. Matas technic or one of its modifications should be used for restoration of the artery and vein with care being taken not to destroy collateral circulation.

St. Joseph's Hospital.

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#### HARM OF MAKING CHILDREN DIFFERENT

"There probably is no unhappier child than the one whose parents insist that he be different, wear different clothes, have a different kind of haircut, or in some other way be made conspicuous," Douglas E. Lawson, Ph.D., Carbondale, Ill., declares in *Hygeia, The Health Magazine*. "Children's personalities carry the scars, sometimes for life, when parents attempt this kind of personality surgery in the effort to create an improved variety of child."

#### RAW VEGETABLE JUICES

Raw vegetable juices are not only likely to have a high bacterial count but may even carry contagious disease germs, *Hygeia, The Health Magazine* warns.

Pasteurization or modern processes of canning vegetable juices destroy bacteria and harmful disease germs and thus make the juice safe for consumption.

Such juice contains water soluble carbohydrates, minerals and vitamins. However, *Hygeia* says, "most of the fiber from the vegetable will be left behind and discarded, as will also that portion of the carbohydrate, mineral salts and vitamins which is not soluble in water. The substances left behind are as much needed for promoting health, especially the fiber, to prevent constipation, as are those obtained in the fruit juices. Provitamin A (carotene) is present largely in the suspended particles of vegetable juices. Therefore, separation of the juice from the pulp removes a large proportion of this vitamin.

"Hence, if one eats a sufficient quantity of whole vegetables, raw in salads or properly cooked, he will be just as well or better off from a nutritional point of view than if he takes the juices alone."

## MEDIONECROSIS AORTAE IDIOPATHICA CYSTICA WITH SPONTANEOUS RUPTURE

REPORT OF THREE CASES WITH NECROPSIES

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AND

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Little has been added to the knowledge of idiopathic medionecrosis of the aorta with spontaneous rupture since the thorough investigations of Alan Moritz<sup>1</sup> in 1931. However, several more cases have been reported in the literature and cystic change and elastic degeneration in the aortic media in the absence of rupture have been observed in routine necropsy material and studied more or less thoroughly.

Up to late in 1939 thirty-two cases of spontaneous rupture due to medionecrosis had been recorded in the literature. In these cases a hereditary factor was not suggested. Quite recently, however, von Mayenberg<sup>2</sup> reported the occurrence of spontaneous aortic rupture in two brothers, one a 38 year old factory worker and the other a 45 year old farmer. The former died suddenly while eating a meal and the latter died shortly after sexual intercourse. In the 38 year old factory worker necropsy revealed a horizontal aortic tear in the ascending arch with hemorrhage into the pericardial sac. In the former two horizontal ruptures of the ascending arch were discovered with a dissecting aneurysm extending proximally to the origin of the left coronary artery and distally to the diaphragm. Histologic examination showed the lesions to be idiopathic medionecrosis in both cases.

In a study of 210 routine necropsies, Rottino<sup>3</sup> found eight aortas showing advanced cystic changes in the media without rupture. Since Moritz's report, we have made a more or less cursory study of the majority of aortas in our necropsy material and have found medionecrosis with cystic change in the absence of rupture to be not particularly rare. Since so few cases with rupture have been recorded and as a possible hereditary factor is suggested by one of our cases, we thought that the addition of three cases to the literature might be worth while.

#### REPORT OF CASES

Case 1. White male, aged 42, following climbing stairs, was seized with a coughing spell and marked substernal pain which increased until he became quite cyanotic. The pain was quite severe in his back and extended down his legs. Upon entry to the hospital he was in profound shock. The heart sounds were distinct but the pulse imperceptible. The blood pressure could not be recorded. A roentgenogram of the chest was normal. The patient was obviously in a moribund state when he entered the hospital and died shortly

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thereafter. He was completely conscious until his heart stopped beating.

**Past History.**—He was an excessive smoker of cigars and cigarettes; he formerly had used alcohol in excess but had used none in the last two years. At the age of 5 he had drunk some lye solution but recovered without any esophageal stricture. At the age of 17, while attending school in Munich, he is said to have had Malta fever. His clavicle was fractured when he was a young man. He had had a chronic antrum and ethmoid infection for seven years which had not been relieved by several operations. Periodic physical examinations for several years revealed no abnormality except that his systolic blood pressure was 156. The Wassermann tests always had been negative.

**Family History.**—A remarkable feature was the history of his father's sudden death at the age of 67 years. While cranking his car, the father was suddenly seized with a pain in the chest and died some days later following the development of multiple venous thromboses. There was no history of syphilis or alcoholism. He was an active man, often playing thirty-six holes of golf in a day. He was an excessive smoker but drank very little. At necropsy, a transverse laceration of the aortic intima was observed about 2 centimeters below the aortic valve. The pathologist who had performed the autopsy several years ago was interrogated regarding the findings and stated that there was no evidence of atheroma or syphilis.

**Necropsy.**—When the abdomen was opened, an extensive retroperitoneal hemorrhage was found. In the chest, however, there was no intrapleural extravasation. About 25 cubic centimeters of bloody fluid was present in the pericardial sac and the heart was moderately enlarged. A transverse laceration was found in the aortic intima which almost completely encircled it (fig. 1). This was located 1 centimeter above the aortic valve. A remarkable dissection was encountered throughout the media which had separated the intima and adventitia and had extended from the point of laceration down to the iliac bifurcation. Several adventitia perforations were present below the diaphragm which

resulted in an extensive retroperitoneal hemorrhage with extension of the latter into the substance of the pancreas. The spleen was lifted upward and almost the entire peritoneum of the pelvis was pushed up toward the abdominal wall. The pelvic dissection probably accounted for the excruciating pain in the legs. The aortic intima was for the most part smooth and shiny. There was one atheromatous plaque  $1\frac{1}{2}$  centimeters in diameter about 4 centimeters below the zone laceration but the intima both above and below the rupture showed a smooth, slick endothelial surface.

**Histologic Pathology.**—Hematoxylin and eosin, Verhoeff, Masson and sudan stains were employed on sections of the aorta at different levels. In the microscopic sections of the aorta, various areas revealed "medionecrosis" (fig. 2) characterized by fragmentation of the elastica of the media and the formation of cystlike areas, some of which attained minute microscopic dimensions. This fragmentation of the elastica was found in all the sections examined and evidence of healing of the areas of elastica degeneration were observed frequently. Healing seemed to have taken place in the form of fibroblastic proliferation and no other inflammatory cells were present. Some foci were encountered in which the elastica had degenerated and had been replaced by what was apparently a proliferation of smooth muscle cells; and these muscle fibers were seen to take the same direction as the long axis of the internal elastica lamella. Moreover, in none of these areas of healing were new formed vessels found. Careful investigation of the adventitia showed no changes in the vasa vasori. Thus, because of the lack of arteriosclerosis in the region of the rupture, the absence of scars or any cellular inflammatory changes in the degenerating and healing areas and the absence of any vascular adventitia findings, we believed that it was possible to rule out arteriosclerosis, syphilis or rheumatic aortitis as of etiologic importance in the aortic rupture in this case.

Case 2. A white female, aged 50, developed a sudden severe pain in the chest with nausea but no vomiting. On examination the pulse was feeble and heart sounds were indistinct. The patient grew progressively worse and three days following this attack died suddenly.

**Past History.**—For ten years she had had frequent chest pains. A clinical diagnosis of coronary occlusion was made.



Fig. 1. Note transverse laceration just above the aortic valve.

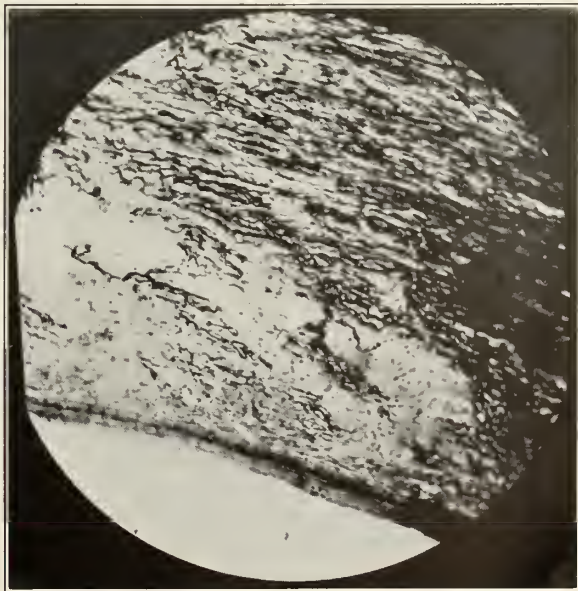


Fig. 2. Verhoeff's stain showing typical cystic change with fragmentation of elastica.

**Necropsy.**—About one half centimeter above the aortic valve in the ascending arch there was a transverse laceration of the aortic intima 2 centimeters in length. Two centimeters distal to this area, at the beginning of the arch of the aorta, there was a large rip in the intima and the medial layers measuring 1½ centimeters in width through which a dissecting aneurysm of the entire ascending and transverse portions of the aorta had taken place. This aneurysm had extended into surrounding hilar areas of both lungs and ruptured into the pericardial sac inferiorly. About 400 cubic centimeters of clotted blood was encountered in the pericardial sac. The smaller transverse laceration extended completely through the intima and media and connected with the aneurysm. There was a slight amount of intimal atheroma present but none was found in the area of rupture and there was no gross evidence of syphilis. The heart which weighed 450 grams showed extensive myocardial fibrosis. The kidneys, spleen and liver showed moderate passive hyperemia. There was a small cortical adenoma of the left kidney. Aside from these findings, nothing of gross importance was observed.

**Histologic Pathology.**—Section stained with Verhoeff, hematoxylin-eosin, Masson and Scarlach R showed cystic spaces similar to those observed in case 1. Most of them were smaller. In the media extensive fragmentation of the elastica was seen with the production of these small cystlike foci. Fragmentation and necrosis of elastica, abutting upon the borders of these spaces, also was seen. Little evidence, however, of healing such as was seen in the sections of case 1 was found. Some cystlike foci appeared to be filled with a faintly bluish staining, semimucinous material. Fragmentation of the elastica of course was most striking at the point of perforation where the dissection started. No areas of atheroma, syphilis or rheumatic aortitis were observed.

Case 3. A white male, aged 68, had been in good health all his life until he suddenly developed a severe pain in his chest followed by nausea and vomiting. A few hours following this, he died. He was not seen by a physician and other pertinent history was not obtainable.

**Necropsy.**—The liver was enlarged about 5 centimeters below the costal margin. The pericardial sac contained about 500 cubic centimeters of blood. The heart was not enlarged. Examination of the aorta revealed a transverse laceration 2 centimeters in length in the ascending portion, about 2 centimeters above the aortic valve. Proximal and distal to the laceration the intima was smooth, and no atheroma or syphilitic changes were observed. For a man of this age the paucity of atherosclerosis was quite striking.

**Histologic Pathology.**—Sections stained with hematoxylin-eosin, Verhoeff's, Masson's and Scarlach R showed minute cystic areas in the media with fragmentation and necrosis of the elastica. In all respects the changes were similar to those observed in cases 1 and 2 except that the foci of healing were not as prominent in this case as in case 1, but more noticeable than in case 2.

#### DISCUSSION

Toxic changes, adrenalin poisoning, avitaminosis, hypertension and changes in the vasa vasorum have been advanced as possible etiologic factors in the causation of media necrosis by Erdheim<sup>4</sup> and others while in only the cases of von Mayenberg could a possible hereditary factor seriously be entertained. In case 1 such a hereditary predisposition is suggested although no histologic sections were made of the father's aorta, hence, the true character of the lesion could not be determined accurately. The location and character of the laceration, however, as well as the absence of gross

evidence of atheroma or syphilis strongly suggested a diagnosis of media necrosis. A history of Malta fever at the age of 17 was the only systemic infection in case 1 but there was no histologic evidence to suggest infection observed in the aorta. Case 2 gave no history of previous infection or other significant data which would suggest an etiologic factor. In case 3 an incomplete history was obtained. All three cases showed the characteristic lesions of cystic medionecrosis. All gross and histological suggestion of atherosclerosis, syphilis and rheumatic disease was absent in the zone of rupture in all instances. There was a remarkable scarcity of atherosclerosis considering the age of the patients involved. This was particularly true in cases 2 and 3. In case 2 practically all of the atheromatous change which was only moderate in amount occurred in the descending aorta, whereas, in case 3, aged 68, the aorta was almost devoid of atheromatous change.

Klotz and Simpson<sup>6</sup> and Alan Moritz subjected aortas to high internal pressures. Klotz tested the aortas of individuals between the ages of 20 and 40 and found that 1,000 mm. of mercury was insufficient to fracture the intima. Moritz, after cutting the aorta just proximal to the aortic valve and ligating the distal end, attached a cannula and pressure bottle to the proximal end. He then injected it with an India ink and saline solution under high pressure so rapidly that within from two to three minutes the intra-aortic pressure registered between 800 and 1200 mm. of mercury. When such pressures were obtained a sudden drop occurred. On necropsy examination all animals were found to have a rupture of the portal vein or of one of its major tributaries. These workers were unable to cause rupture of the aortas and their investigations tend to support the view that spontaneous rupture of a normal aorta does not occur.

#### CONCLUSIONS

Three cases of medionecrosis of the aorta with spontaneous rupture are recorded. The ages ranged from 42 to 68 years. In all cases the gross and microscopic pictures were typical. In one case the victim's father had died from a similar lesion.

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Brown rice, which goes through a less extensive milling process than white rice, contains four times as much vitamin B<sub>1</sub> and three times as much minerals as the white variety, *Hygeia, The Health Magazine* reports.

## HISTAMINASE

## CLINICAL EXPERIENCES IN NONALLERGIC DISEASES

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The use of histaminase in allergic conditions has been reported by numerous investigators.<sup>1,2</sup> The rationale of this procedure lies in the assumption that histamine produces the symptoms associated with allergy and that histaminase, which is the physiological antagonist, should relieve these symptoms. Some investigators have been successful in inhibiting anaphylactic shock in laboratory animals.<sup>3,7</sup> Good results have been noted in human patients with serum sickness by some<sup>8</sup> while others have had less success. Allergic rhinitis, migraine, various types of allergic dermatitis as well as physical allergy and some cases of allergic gastrointestinal disease have been reported as responding well to histaminase.<sup>9,13</sup>

It has been shown by several investigators<sup>14,19</sup> that stasis, congestion and shock are associated with the release of increased amounts of histamine into the blood and tissues. Such a simple procedure as the use of a tourniquet for the production of stasis will increase the amount of histamine present in the blood coming from that part as much as from 200 to 300 per cent. It also has been shown that rhythmic contractions of the uterine muscle<sup>20</sup> also increased the amount of histamine in the blood. Hemorrhage also is associated with increased histamine production. If these observations be true, then a histamine release must be associated with many clinical conditions. Any condition in which there is increased contractions of the smooth muscle, chronic hemorrhage or prolonged swelling, as in chronic inflammation, should lead to increased amounts of histamine and these conditions theoretically should be benefited by the use of histaminase. The chronic swelling and stiffness of rheumatoid arthritis, the cramps and pain of primary dysmenorrhea, the vascular spasm of migraine all suggest the possibility of increased histamine release and the possible usefulness of histaminase therapy.

With these thoughts in mind, it was decided to attempt an evaluation of histaminase in various conditions which did not seem to be allergic in etiology but which conceivably could be associated with increased production of histamine.

It seemed obvious even before the studies began that histaminase might not be effective at times even though the symptoms resulted from release of histamine. There are, for example, certain conditions in which the reaction is localized and protected more or less against neutralization by his-

taminase or the amount of histamine present might conceivably be too great to be neutralized by the amounts of histaminase which can be administered comfortably. The problem must be considered from this standpoint and an attempt made to administer large doses to resistant cases and smaller doses to the more amenable cases. With these things in mind, the following clinical conditions were studied: migraine (idiopathic, menstrual and menopausal), primary dysmenorrhea, rheumatoid arthritis and vascular headaches. A few cases of bursitis and fibrositis as well as physical allergy also were studied. Torantil brand of histaminase was used throughout the study.

## PRIMARY DYSMENORRHEA

Seventeen patients with primary dysmenorrhea are included in this group. All were subjected to pelvic examination to rule out so far as possible the presence of infection or other organic pelvic conditions. All seventeen patients had been treated with the ordinary types of therapy with unsatisfactory results.

It was thought wise to follow these patients for several months since it is well known that a change in therapy sometimes will produce a temporary improvement during one menstrual period.

These patients were placed on histaminase three or four days before their expected period and were given from 60 to 90 units per day in divided doses. The medication was continued during the first two days of the menses. Those patients who were irregular frequently had no opportunity to start the medication until menses were established.

Table 1 presents the results in concise but adequate form. It will be noted that not all cases were relieved; three cases failed to secure any relief and four cases had only partial relief of symptoms. It was noted that relief was never as satisfactory or complete if the patient failed to take the histaminase tablets for three or four days before menstruation began. Some patients were so irregular that they invariably neglected this phase and consequently received only partial relief. It will be noted also that most of the patients had a return of symptoms promptly when the medication was discontinued. In several instances the supply of drug was exhausted in the third month and these patients had return of symptoms, not as severe in some instances but, nevertheless, a definite return of pain and nausea. These symptoms were avoided the following month when the drug again was administered.

The drug had little effect on the character of the menses. Some of the patients noticed a slight increase in the flow and three patients stated that the menstrual period was prolonged a day. Those patients who obtained relief also remarked on the increased sense of well-being during the menstrual period.

On the basis of the seventeen cases studied, we feel justified in stating that many cases of primary

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Table 1. *Primary Dysmenorrhea*

Number	Age	Complaint	1st Month	2nd Month	3rd Month	Comment
1	22	Cramps first 3 days	Much improved	Cramps practically gone		8 tablets for 3 days before
2	18	Cramps first day	No cramps	No cramps	No cramps	6 tablets a day 4 days before
3	20	Cramps, migraine	No cramps, no migraine	No cramps, no migraine	No cramps, no migraine	Four periods with relief. Tablets t.i.d. for 3 days before
4	33	Cramps	Marked relief	No relief		Tablets t.i.d. for 3 days before; period irregular, did not take before 2nd period
5	20	Cramps, migraine	No cramps, no migraine	Return of migraine		Tablets t.i.d. 3 days before period
6	20	Cramps	Complete relief	Complete relief	No relief	Tablets 9 a day 4 days before; did not take with 3rd period
7	22	Cramps	Complete relief	Complete relief		
8	28	Cramps	Complete relief	Complete relief	Complete relief	Tablets t.i.d. 3 days before
9	18	Marked cramps	No relief	No relief		Periods irregular; could not get prescription over 1 day before in either period
10	24	Cramps	No relief	No relief		Tablets 9 daily 4 days before
12	18	Cramps, nausea	Partial relief	Complete relief	Complete relief	9 tablets daily before and during period
13	20	Severe cramps, headache, nausea	Complete relief	Complete relief	Complete relief	9 tablets daily before and during menses
14	23	Nausea, headache, cramps,	No relief	No relief	No relief	Menses irregular; uncooperative
15	18	Severe cramps	Partial relief	Partial relief	Partial relief	Patient was able to be up and active during menses
16	26	Vomiting, cramps	Partial relief	Partial relief	Partial relief	Vomiting controlled; cramps less severe
17	17	Migraine, cramps	Complete relief	Complete relief	Complete relief	9 tablets 3 days before and after menses

dysmenorrhea will respond to adequate amounts of histaminase (45 to 60 units per day or more) started three days before the expected period and continued for the first two or three days of the menstrual period. Histaminase is not a cure and must be used before each menstrual period. Some patients have followed this regime for more than six months with satisfactory results. It is difficult to determine the actual cause of dysmenorrhea and it is equally difficult to decide why histaminase should be useful. Some authors have proposed an allergic basis for dysmenorrhea but it is difficult to sustain this hypothesis. It seems more logical to believe that in certain individuals excessive congestion and increased uterine contractions may be associated with a histamine release which, in turn, accentuates pain and that this cycle is broken by administration of histaminase. This is purely hypothetical but it seems more reasonable than the idea that allergy per se is responsible for dysmenorrhea unless one wishes to assume that the patients are sensitive to their own hormones or excretions.

#### MIGRAINE

Migraine is a clinical entity which consists of unilateral headache, aura, gastric distress and

Table 2. *Migraine Ideopathic*

Number	Sex	Age	Duration of Disease	Result
M3	F	22	3 yr.	Marked improvement
G2	F	26	6 mo.	Marked improvement
A16	M	30	6 mo.	Marked improvement
M13	F	27	3 mo.	No improvement
H4	F	39	10 yr.	Improved
K12	F	24	8 yr.	Improved

severe prostration. The disease is more common in women than in men. In six cases we could find no etiological factor and this group is designated as idiopathic migraine (table 2). Three cases apparently were associated with the menopause and five cases definitely were associated with menstruation (table 3). The menopausal and the menstrual migraine patients had been given various estrogenic substances as well as pituitary extracts without benefit. The patients with menstrual migraine responded satisfactorily to a regime similar to that used in primary dysmenorrhea. Those with menopausal migraine, however, did best when they were maintained on daily doses of from 30 to 60 units.

Table 3. *Migraine: Menopause (A) Menstrual (B)*

Number	Age	Complaint	1st Month	2nd Month	3rd Month	Comment
1	26	Migraine (B)	Complete relief	Complete relief	Complete relief	Tablets for 3 days before
2	39	Migraine (A)	Delayed 4 days	Complete relief	Complete relief	9 tablets 4 days before
3	38	Migraine (A)	Partial relief	Partial relief	Partial relief	6 tablets 4 days before
4	44	Migraine (A), nausea	Complete relief	No benefit		9 tablets a day 4 days before, pe- riods irregular, hard to judge when to start
5	20	Migraine (B)	Complete relief	Partial relief	Complete relief	9 tablets 4 days before
6	20	Migraine (B)	Complete relief	Complete relief	Complete relief	9 tablets 4 days before
7	33	Migraine (B)	Complete relief	Complete relief	Complete relief	9 tablets daily before and during menses
8	22	Migraine (B)	Partial relief	None	None	

The cases of idiopathic migraine in this series had been followed for from three to six months and had had ergotamine tartrate, O<sub>2</sub> and other treatment without relief before histaminase was started.

The patients with idiopathic migraine were told to begin taking the medication in large doses (50 to 75 units) as soon as the aura was noted and to continue this dose every hour for four doses. One patient obtained no results and discontinued treatment in a short time. Two patients were able to relieve their symptoms to the point that they could work in comfort but the headaches were not completely relieved. Both of these patients have continued therapy.

Three patients who have definite auras are relieved completely if they begin histaminase promptly. If the headache is allowed to start, its severity and duration can be diminished but cannot be completely relieved. Histaminase again seems to be capable of producing symptomatic relief without relieving the underlying cause of migraine. In some cases of migraine extremely large doses are required and this is not always feasible since from fifteen to twenty tablets represent the maximum oral dose which patients will tolerate. If this dose is exceeded for any length of time, nausea supervenes and vomiting may occur. It may be possible to treat these cases more effectively by parenteral injections.

Three cases of periodic headaches not associated with menstruation or menopause but with radiological evidence of thickening of the inner table of the frontal bone were tried on histaminase without improvement or relief.

#### VASCULAR HEADACHES

Horton<sup>21</sup> has described a peculiar type of headache which occurs more frequently in men than in women. These headaches are extremely severe and may persist for variable periods of time ranging from a few minutes to one half hour and they may return many times during the day. During the paroxysm the patient is totally incapacitated and in those cases in which the attacks occur five or six times a day, the patient may not be able to work at all. During an attack the vessels of the face

are engorged, the eyeball may protrude, saliva drips from the mouth and the side of the face is flushed and moist. The attack is characteristic and once seen is not easily forgotten. Horton has used histaminase injections with good results. We have seen five cases which we feel are definite enough to be considered in this group. All of these cases suffered excruciating pain, drooled and had flushing of the face. The use of histaminase was completely successful in two of the cases; marked relief was obtained in two and only partial relief was obtained in another. Large doses are indicated and

Table 4. *Vascular Headaches*

Number	Age	Complaints	Unit Dose Per Day	Results
1	42	Repeated severe headaches with flushing	100	Complete relief
2	39	Headache, unilateral flushing	75	Complete relief
3	45	Headache unilateral visual disturb- ance, flushing	100	Partial relief; frequency reduced
4	60	Unilateral headache, flushing	175	Relief
5	55	Nausea, tearing headache	200	Relief

we started all cases on 100 units per day and maintained them on smaller doses if possible (table 4).

#### RHEUMATOID ARTHRITIS

Twelve classical cases of rheumatoid arthritis were used in this study. All of these cases had had arthritis for from four months to twelve years. All cases had been followed for three months or more. Our purpose in the study was to determine the effects of histaminase on swelling, pain and stiffness. The doses used ranged from 150 to 250 units and patients were kept on the drug for from two to five months (table 5). The results were not startling. Six cases showed reduction in swelling about the joint and decrease in stiffness, two noticed subjective improvement, two had question-

Table 5. *Rheumatoid Arthritis*

Number	Sex	Age	Duration of Disease	Unit Dose Per Day	Duration of Treatment	Results
13	M	38	5 yr.	200	4 mo.	Slight improvement
11	M	24	3 yr.	150	4 mo.	Improvement
14	F	37	10 yr.	175	4 mo.	Improvement
12	F	40	12 yr.	250	2 mo.	No improvement
15	F	39	1 yr.	250	2 mo.	No improvement
16	M	20	4 mo.	250	5 mo.	Questionable improvement
20	F	35	5 yr.	250	4 mo.	Slight improvement
21	F	23	2 yr.	250	4 mo.	Improvement
18	F	30	6 yr.	150	4 mo.	Questionable improvement
19	F	40	12 yr.	150	4 mo.	Improvement
17	F	49	8 yr.	150	4 mo.	Improvement
10	F	52	10 yr.	150	4 mo.	Improvement

able improvement and two showed no improvement. In no case was the improvement sufficiently marked to justify prolonged treatment although several of the patients have continued the medication at their own request.

We feel that relief of swelling and stiffness is all that can be expected from this type of therapy. The greater the degree of swelling the more marked were the results obtained in our experience. Histaminase in bursitis or fibrositis was not spectacular. We were unable to obtain relief of pain by this drug although Abel<sup>22</sup> had reported encouraging results in some cases.

#### DISCUSSION

There can be little doubt but that histaminase is useful in certain clinical conditions. It is equally obvious that the best way to determine the need for this drug would be quantitative determinations of histamine in the blood or tissue fluids. Unfortunately, the methods for this determination are cumbersome, inaccurate and do not lend themselves to clinical study. It is necessary then to use clinical judgment in selection of cases and to be rather critical of the results. It would seem far better to err in the direction of denying effectiveness to the drug than to yield to natural desires and give credit to the drug when results are questionable. Insofar as possible it seems best to avoid the patients' interpretations of results and to judge improvement on objective rather than subjective basis. This can be done fairly well in most of the cases studied. In the cases of primary dysmenorrhea, however, it was necessary to accept the patients' evaluation of improvement and for this reason we did not attempt to determine the effect of the drug until at least three menstrual periods had elapsed since it is our experience that patients rarely maintain improvement over long periods of time if those

improvements are due to psychological factors rather than actual therapeutic effects of the drug given.

We, with others,<sup>12</sup> have noted a fluctuation of the results obtained by the drug which is due, we are sure, to the absence of potency which has occurred in some lots of the drug. More recently, this disadvantage has been overcome and the new enteric coated tablets seem to be more uniformly potent.

Histaminase is derived from the intestinal mucosa and kidney substance of pigs and there seems to be a reasonable possibility that patients sensitive to pork might react unfavorably to large doses. In our entire experience we found only two individuals who apparently reacted in this way; both of these patients, who had asthma, developed mild urticaria while on histaminase.

The method for giving the tablets seems worthy of mention. These tablets should be given from thirty to sixty minutes before meals and should be given with a glass of cold water. If the tablets are given immediately before, during or after a meal, they may dissolve in the stomach producing gastric distress and a marked loss of potency of the drug. When the drug is given as suggested, large doses may be given. We have given as many as twenty tablets at one dose and repeated this dose three or four times a day for several days without nausea or other gastric symptoms.

It is our feeling at this time that clinical conditions which might well be associated with histamine release should be treated symptomatically with histaminase. In addition to those conditions studied by us it seems reasonable to suppose that cases of burns, surgical shock and severe trauma might well be tried on this drug.

#### CONCLUSION

Torantil (histaminase)\* has been used with satisfactory results in migraine, vascular headaches, primary dysmenorrhea and with less success for relief of pain and swelling in rheumatoid arthritis, bursitis and fibrositis.

A possible rationale for the use of this drug in these nonallergic conditions is given.

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\*Torantil was supplied by the Winthrop Chemical Co.

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## THERAPEUTIC REPORTS

### THE USE OF BENZEDRINE SULFATE TO OVERCOME THE UNTOWARD EFFECTS OF MORPHINE IN THE TREATMENT OF CORONARY OCCLUSION

J. DE VOINE GUYOT, M.D.

JEFFERSON CITY, MO.

In spite of its disadvantages and dangers, morphine is invaluable in the treatment of coronary occlusion. It relieves the pain and quiets the patient, but these benefits usually are counteracted partly or entirely by aggravation of nausea, vomiting, ventricular tachycardia and depressor effect characteristic of the disease.

Benzedrine sulfate has been used successfully to treat morphine addiction and withdrawal symptoms<sup>1, 2</sup> which suggested applying this antagonism in acute coronary thrombosis. The combined medication was used in fourteen cases. As soon as possible after the administration of morphine, in doses of from  $\frac{1}{2}$  to  $\frac{3}{4}$  gr. repeated as required, the patients were given a 10 mg. tablet of benzedrine sulfate by mouth. A second tablet was given if the nausea and depressor effect were not counteracted sufficiently, and in all cases an additional tablet was given four hours after the first. More than 40 mg. was never necessary.

#### RESULTS

Vomiting was controlled by a single dose of benzedrine sulfate in all but one case. This patient

responded to a second dose. Bowel action was inhibited far less than when morphine was given alone. Mild measures such as low enemata sufficed to insure evacuation when constipation was a factor. The blood pressure fall which averaged from 50 to 75 mm. Hg. after morphine alone, was reduced to 20 mm. when benzedrine was used. The mental depression and hebetude associated with morphine were minimal in patients receiving benzedrine sulfate. The following cases are typical of the series.

#### CASE REPORTS

Case 1. W. A. F., aged 72, had a history of arthritis of ten years' duration and attacks of angina on effort which were always relieved by nitroglycerin. In March 1939 he was seized with unusually severe pain an hour after going to bed. Nitroglycerin failed to give relief. When examined, he was pale, dyspneic and restless. Heart sounds were weak and blood pressure was 120/65 although the patient stated that it was ordinarily 170/110. He complained of severe substernal pain radiating to the left arm, neck and jaw.

Although he reported that morphine had always caused extreme nausea and constipation,  $\frac{1}{2}$  grain was given. An additional  $\frac{1}{4}$  grain given thirty minutes later relieved the pain. This was followed by 10 mg. benzedrine sulfate. There was no further decline of systolic pressure and the diastolic rose to 78 mm. Hg. There was no nausea at any time. The combined medication was repeated twice during the night. The following day the patient felt much better. The electrocardiograms showed a typical QT tracing. Recovery was uneventful.

Case 2. J. G. T., aged 58, gave a history of frequent mild attacks of angina, always relieved by nitroglycerin. An attack of coronary occlusion caused severe substernal pain which did not yield to the usual medication. When the patient was seen it had lasted for more than two hours in spite of  $\frac{1}{4}$  gr. morphine given by the family physician. The patient was beginning to suffer from nausea which he said always occurred after morphine. This was relieved in twenty minutes by 10 mg. benzedrine sulfate. Additional doses of morphine and benzedrine sulfate were administered as required. There was no constipation. The electrocardiogram revealed a basal infarct which has responded gradually to treatment.

#### COMMENT

The value of the combined use of morphine and benzedrine sulfate depends largely upon the antagonism of the two drugs. Morphine aggravates certain signs and symptoms of coronary thrombosis, i. e., nausea, vomiting and fall of blood pressure, and in addition makes the patient constipated.<sup>3</sup> Although I have not always been able to control vomiting from other causes by giving benzedrine sulfate, others<sup>4, 5</sup> have found it effective in seasickness. In this series of cases it proved to be effective, probably through the depression of the vomiting center activated by morphine. This antagonistic effect is of course useful only in those patients in whom morphine causes nausea and vomiting.

The fall of blood pressure induced by morphine is protective but benzedrine sulfate prevents this fall from being unduly great. As stated by various authors<sup>6, 7</sup> the drug has its most marked pressor

effect when the pressure is artificially lowered. It might be objected that a pressor effect, however slight, is dangerous in coronary occlusion, but there was no harmful result in the fourteen cases studied.

The synergistic action of the two drugs is probably of little significance in coronary occlusion. However, morphine is supposed to give some relaxation of the coronary arteries. This effect conceivably may be augmented by benzedrine sulfate since Siler<sup>8</sup> found that it increases coronary flow in dogs.

Morphine tends initially to produce spasm of the duodenum followed by relaxation of the entire small intestine.<sup>9</sup> The action of benzedrine sulfate also is chiefly relaxing<sup>10</sup> although contrary effects have been observed.<sup>11</sup> It is therefore difficult to understand why constipation seemed to be decreased rather than increased by the latter drug.

Because benzedrine sulfate may cause restlessness, it might be expected to have an unfavorable effect in coronary disease. However, it would appear that in the dosage used it did not overcome the calming effect of morphine although it improved mood and made the patients more capable of co-operation. Should the central stimulation of benzedrine sulfate be undesirable, it can be combatted advantageously with sedatives without prejudice to other effects as pointed out by Myerson.<sup>12</sup>

#### SUMMARY

Benzedrine sulfate was found to be of value to counteract the undesirable effects of morphine used in the treatment of fourteen cases of coronary occlusion. The rationale of the therapy is discussed.

Dallmeyer Building.

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## USES OF EUCUPIN (ISOAMYLHYDROCU- PREINE) PROCAINE SOLUTION IN OPHTHALMOLOGY

A. W. McALESTER, 3rd, M.D.  
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Eucupin compounds perhaps have been used more in proctology than in any other branch of surgery; in the last two years it has been used for back pain, sprains and throat surgery. The drug is valuable for its prolonged anesthesia. When used in an aqueous solution the anesthesia lasts for from three to seven days; in oil solution the anesthesia lasts much longer, for from fifteen to forty days.

I have found it of great assistance in eye conditions in which pain has persisted for a period of several days or weeks. I use it routinely to relieve brow ache in iritis. The supra-orbital nerve is injected with from ¼ to ½ cc. This makes the patient very comfortable and relieves the acute suffering for a period of from five to seven days. The nerve is injected again if it is found necessary. It is also of value in supra-orbital and infra-orbital neuralgia that arises from different etiological factors. The analgesia that follows is very restful.

I do not deem it advisable to use eucupin as a block for cataract extraction as the paralysis of the lids is too prolonged.

I have hopes that eucupin-procaine can be used in squint surgery to paralyze a muscle completely for five or six days and avoid bandaging both eyes for four or five days. The cases in which I have injected the muscles that have been operated on and those not operated on have not had a complete paralysis. There has been some limitation of movement but not a total loss of motility. I believe the reason was that I was not able to place the solution over the entire length of muscle by means of injection.

Two cases of para-facial spasm were injected; one was treated three times and the other twice. In both instances there was considerable relief for a period of about ten days.

The solution used about the lids following canthoplasty, done to relieve pressure and blepharospasm as a complication of trachoma, made the patient very comfortable for a limited number of days; apparently much more so than before I used eucupin.

I have not observed any local tissue reactions or systemic effect from the use of this quinine derivative in my series of cases.

It might be stated that when eucupin was first brought out in 1926 some local toxicity\* was reported. However, the product has been refined and in my experience there have been no untoward effects.

2003 Bryant Building.

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MARCH, 1941

## EDITORIALS

### THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

## WAR MEDICINE

*War Medicine*, the new bimonthly periodical being published by the American Medical Association in cooperation with the National Research Council, Washington, D. C., was established as a means of recording the contributions of the medical profession to the nation's defense. An editorial in the first issue of the publication explains the aims of the journal as follow:

"The problems involved in medical care of troops in training and in the field, of men on battleships and submarines and of pilots, observers and gunners in the air are specialistic aspects of medical practice with which few civilian physicians are familiar. The peculiar nature of wounds resulting from gunshot and explosions, the physiologic changes associated with life aboard a submarine and the extraordinary hazard of infections when hundreds of thousands of men are closely crowded in barracks create hygienic and sanitary conditions to which few physicians in civilian life have given serious consideration. Yet all of these factors may become at any moment the intimate and immediate concern of any and every physician in the United States.

"In previous military emergencies American physicians have not been found lacking. Whenever called on, they have given of their utmost for defense or for attack. Well nigh one third of the physicians in the United States were engaged in some activity related to the preparedness of the nation in World War I. Even a greater number might be required in contingencies now in prospect should the country be drawn into the present conflagration.

"Last spring the Surgeons General of the Army and Navy addressed the Division of Medical Sciences of the National Research Council and the House of Delegates of the American Medical Association, requesting their cooperation in the standardization of medical procedures to be used for the Army and the Navy and in the securing of adequate personnel. Both of these agencies responded promptly with the setting up of suitable mechanisms to meet these requirements. Soon it became apparent that a medium was desirable for the recording of such procedures as might be adopted, of the results of research projects under the control of the National Research Council and of information concerning problems of personnel. Dissemination of information in matters of this type is in itself a procedure that requires special training. Early, therefore, in its work the Division of Medical Sciences of the National Research Council set up a Committee on Information and selected the editor of *The Journal of the American Medical Association* as chairman of that committee. Associated members are editors of other publications in the field of medicine, librarians familiar with medical literature, medical historians and representatives of the

various governmental services. When the Trustees of the American Medical Association, in pursuance of the desired objective, determined to aid in this project by the publication of a periodical to be devoted wholly to medical preparedness and war medicine, the Committee on Information of the Division of Medical Sciences of the National Research Council was chosen to act as the editorial staff.

"The material here published is authentic to the extent that it has passed the surveillance of members of this committee. Each of the original contributions has been considered by an expert in one of the numerous special committees of the Division of Medical Sciences of the National Research Council. Elsewhere in this issue appears a complete statement regarding the organization of this work, as well as the present status of the activities at the headquarters of the American Medical Association in the development of a bank of information concerning physicians available for the Army, for the Navy, for industry, for public health work or for other important purposes. The editorial board of *War Medicine* hopes to be able in future issues not only to provide the official reports of special committees, similar to the circular letter on chemotherapy in this issue, but to make adequate record of the contribution of the medical profession to the nation's defense."

#### BOARD OF CIVILIAN PHYSICIANS WILL STUDY EPIDEMICS IN ARMY

The establishment of a board of civilian physicians for the investigation of influenza and other epidemic diseases in the Army has been announced. The board was ordered by the Secretary of War, acting on the recommendation of Surgeon General James C. Magee. The statement of the Surgeon General sent on December 27, 1940, follows:

"The present expansion of the Army has been accompanied by an increase in influenza and other acute respiratory diseases among troops. In certain localities these diseases have reached epidemic proportions, but fortunately they are still relatively mild and their mortality is low. However, if we may judge from the experience of previous mobilization, this comparatively favorable condition probably will not continue. As larger numbers of selectees are brought together, the rapid passage of infection from one individual to another will probably cause an increase in prevalence, virulence and fatal complications. In fact, the possibility cannot be ignored that the Army may again be confronted by another pandemic of influenza of the virulent type which caused such a large proportion of the total deaths among our troops during the last war.

"During that period one of the important agencies utilized in the campaign against infectious diseases consisted of special boards composed of the most competent specialists available in the country,

either military or civilian, whose function it was to study such conditions among troops and to advise the Surgeon General as to methods of prevention and treatment. An outstanding example was the 'Pneumonia Board' appointed in 1918 (Special Order 118, W. D., May 20, 1918). This board, which met at irregular intervals in Washington at the call of the Surgeon General, not only rendered advisory service of inestimable value but organized and directed the studies of groups of expert epidemiologists, bacteriologists, chemists and pathologists, who were sent to certain camps and hospitals to investigate and combat this disease.

"Since the World War our knowledge of the acute respiratory diseases has been increased enormously. We now know that certain of the inter-pandemic types of influenza are caused by filtrable viruses, and as these viruses can now be isolated it seems probable that eventually it may be possible to develop specific methods for their prevention. In view of the progress made recently in the study of these diseases, which are of such vital importance to the health and welfare of American troops, it is considered of urgent importance that the Army make immediate arrangements to utilize every scientific facility available in this country in a concerted effort to control these diseases and to reduce their mortality to a minimum.

"With this objective in view, authority is requested for the Surgeon General to appoint and maintain a board for the investigation of the etiology, epidemiology, prevention and treatment of influenza and other acute epidemic diseases in the Army, this board to consist of such prominent physicians and other scientists as may be required from time to time, regardless of whether or not they are in the military establishment or other federal services or civilians not in the employ of the federal government. Because of the rapidity with which the respiratory diseases strike and the explosive nature of certain of the epidemics, it is essential that the organization of the board be made flexible and that its activities not be hampered by unnecessary administrative delays.

"It is therefore recommended that this board be formed essentially as follows:

"(a) *Organization and Personnel*.—That the board consist of (1) a central body of such scientists and technicians as may be required, which will meet at the call of the Surgeon General; (2) an additional group of such expert scientists and technicians as may be required as consultants, who will meet with the central body when called on individually by the president of the board; and (3) investigative teams, the number to be determined by the disease situation, each consisting of three or more scientists and technicians, who may be sent for temporary duty at military stations when deemed advisable by the Surgeon General for the study and control of epidemics. It is important that the total personnel for the board not be limited at this time but that it be

subject to change from time to time as the Surgeon General may deem necessary to meet any emergency disease situation which may arise in the Army.

"(b) *Status of Civilian Personnel.*—That the civilian members of the board who are not federal employees be paid transportation expenses and \$20 a day while on temporary active duty at meetings or on investigative assignments with military organizations.

"(c) *Procedure.*—That the central body of the board hold meetings from time to time, at times and places designated by the Surgeon General, in order to study the available current information concerning epidemic disease in the Army, and to formulate and recommend to the Surgeon General plans for its further study and control.

"(d) *Control.*—That when the Surgeon General selects a team to investigate an epidemic at a military station the personnel of the team will be ordered to report to the proper local authority for temporary duty and will remain under that authority until the work is completed. The investigators will conduct their studies according to instructions from this office with as little interference as possible with the routine care of the sick. They will have the privilege of direct communication with the Surgeon General through technical channels on technical matters, and all other communications will be routed through regular military channels. A final report of the results of each investigation will be submitted to the Surgeon General through the main body of the board.

"This establishment of this board will make available to the Army the scientific resources of the country to assist in the program for the control of influenza and the other epidemic diseases which will undoubtedly arise in our expanding army. Incidentally, its existence will undoubtedly be a matter of great satisfaction to the citizens of the country, who, remembering the tragic experience of the Army with influenza in 1918, are so vitally concerned over the possibility of a repetition of that experience. Therefore, from the viewpoint both of developing an effective agency for the study and control of this disease and the national morale, authority for the immediate formation of this board is urgently requested.

"JAMES C. MAGEE,  
"Major General, U. S. Army,  
the Surgeon General."

On January 11, 1941, the plan was approved with the following memorandum:

"War Department, A. G. O., January 11, 1941—To the Surgeon General.

"The plan outlined in the basic letter for the establishment of a board for the investigation of influenza and other epidemic diseases in the Army is approved, except that civilian members of the board who are not federal employees will be paid

not to exceed \$20 per diem for any person so employed and necessary traveling expenses.

"By order of the Secretary of War:  
"A. P. SULLIVAN, Adjutant General."

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## NEWS NOTES

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Dr. D. K. Rose, St. Louis, addressed the staff of the Missouri Pacific Hospital, St. Louis, on February 17 on "Neurogenic Bladder Secondary to Injury."

The Trudeau Club of St. Louis met February 6 at the Firmin Desloge Hospital. Appearing on the program were Drs. H. I. Spector, G. Flynn, T. N. Zarlango and H. E. Oppenheimer, St. Louis.

Dr. Nelse F. Ockerblad, Kansas City, was a guest of the Milwaukee County (Wisconsin) Medical Society on January 11 at Milwaukee and spoke on "History of Urinary Calculi."

Dr. Evarts A. Graham, St. Louis, has been elected to the Royal Society of Sciences of Upsala, Sweden, an organization founded in 1710. Election to the society is based on scientific merit in the member's chosen field. Dr. Graham was the only American in five new members elected recently.

Dr. Andy Hall, St. Louis, was a guest of the Perry County (Illinois) Medical Society at Pinckneyville, Illinois, on February 6 and spoke on "Pyelonephritis of Pregnancy." On January 22 Dr. Hall was the guest of the Tri-County (Illinois) Medical Society at Metropolis, Illinois, and spoke on "Urological Problems of the General Practitioner."

The Committee on Scientific Exhibits for the Annual Session of the Association, which will be held in St. Louis, April 28, 29 and 30, 1941, will be glad to receive requests for space for scientific exhibits, either by individuals or organizations. Applications should give an outline of the subject matter to be covered, figures on floor and wall space necessary to display the exhibit properly and whether motion pictures will be used. Applications should be addressed to Dr. Ralph R. Coffey, Chairman, 1324 Professional Building, Kansas City.

Programs and invitations for the St. Louis Clinics' Annual Spring Conference to be held at the Coronado Hotel, St. Louis, March 10 to 13, have been sent to physicians in Missouri and neighboring states. The morning of the opening day has been set aside for registration and visiting the commercial and scientific exhibits. The remainder of the time will be devoted to clinical lectures and demonstrations. Evening meetings will be held on

the first two days and round table luncheon discussions will be held on the last three days. Seven outstanding guest speakers are to appear on the program in addition to St. Louis clinicians and Reserve Officers of the Army and Navy.

The St. Louis Gynecological Society was host at a joint meeting with the Chicago Gynecological Society and the Kansas City Obstetrical and Gynecological Society at St. Louis on February 15. In the morning, papers were presented by Drs. Joseph M. Krebs, W. H. Vogt, Jr., J. Grey Jones and W. H. Vogt, St. Louis. Following a luncheon Drs. J. E. Hobbs, W. M. Allen, A. N. Arneson and T. K. Brown, St. Louis, presented papers. At a dinner meeting Drs. Harold O. Jones and John I. Brewer, Chicago, and Dr. George F. Pendleton, Kansas City, gave addresses. Dr. E. Lee Dorsett, St. Louis, president of the St. Louis Gynecological Society, presided at the evening meeting.

Physicians are needed for the medical service of the Civilian Conservation Corps. The principal duties at camps consist of the medical care of the enrollees and the practice of preventive medicine. The initial salary is \$3,200 per year. No quarters for families are provided and physicians are required to pay for their food at camps. Physicians selected for this service are required to pay their own traveling expenses to the headquarters of the district in which they are to be employed where they are put on temporary duty for instruction before they are sent to camps. Traveling expenses incurred in transfer of physicians from the district headquarters to camps or in transfer from one camp to another are paid by the government. Requirements are that the physicians must be a citizen of the United States, a graduate of an accredited medical school, licensed to practice medicine, be physically able to perform the duties involved and be less than 60 years of age. Applications should be submitted to the Office of the Surgeon, Headquarters, Seventh Corps Area, Federal Building, Omaha, Nebraska, giving date on which the applicant will be available and preference of assignment in Minnesota, North Dakota, South Dakota, Iowa, Nebraska, Missouri, Kansas or Arkansas.

## DEATHS

**Swahlen, Percy Hypes, M.D.**, St. Louis, graduate of St. Louis University School of Medicine, 1903; member of the St. Louis Medical Society; Fellow of the American Medical Association; Associate Professor of Gynecology and Obstetrics, St. Louis University School of Medicine; president of the St. Louis Medical Society in 1938; aged 64; died December 10, 1940.

**Van Hoefen, Siegfried A., M.D.**, St. Louis, graduate of the St. Louis College of Physicians and Surgeons, St. Louis, 1902; member of the St. Louis Medical Society; Fellow of the American Medical Association; aged 64; died December 16, 1940.

**Cox, Leander, M.D.**, Springfield, graduate of the Missouri Medical College, St. Louis, 1891; honor member of the Greene County Medical Society; aged 80; died January 7.

**Boisliniere, Louis C., M.D.**, St. Louis, graduate of Washington University School of Medicine, St. Louis, 1882; honor member of the St. Louis Medical Society; Affiliate Fellow of the American Medical Association; Associate Professor of Internal Medicine, Washington University School of Medicine; president of St. Louis Medical Society in 1916; aged 80; died January 11.

**Langsdorf, Herbert S., M.D.**, St. Louis, graduate of Washington University School of Medicine, St. Louis, 1915; member of the St. Louis Medical Society; Fellow of the American Medical Association; president of the St. Louis Medical Society, 1940; aged 49; died January 16.

**Bram, John C., M.D.**, St. Louis, graduate of Barnes Medical College, St. Louis, 1901; member of the St. Louis Medical Society; aged 67; died January 17.

**Reber, Robert L., M.D.**, St. Louis, graduate of St. Louis University School of Medicine, 1906; honor member of the St. Louis Medical Society; Fellow of the American Medical Association; aged 66; died January 20.

**Fair, Jesse Franklin, M.D.**, Trenton, graduate of the Homeopathic Medical College of Missouri, St. Louis, 1885; honor member of the Grundy-Davies County Medical Society and president of the Society in 1924; aged 83; died January 22.

**Bowers, Harvey E., M.D.**, Galt, graduate of the University Medical College of Kansas City, 1900; honor member of the Grundy-Davies County Medical Society; aged 64; died January 28.

**Goodwin, Edward Jewett, M.D.**, St. Louis, Secretary-Editor Emeritus of the Missouri State Medical Association, graduate of Washington University School of Medicine, St. Louis, 1894; honor member of the St. Louis Medical Society and Affiliate Fellow of the American Medical Association; aged 76; died February 18.

## OBITUARY

### EDWARD JEWETT GOODWIN, M.D.

Dr. E. J. Goodwin, St. Louis, Secretary-Editor Emeritus of the Missouri State Medical Association, died at St. Luke's Hospital, St. Louis, February 18.

Funeral services were held at the Lupton Chapel, St. Louis, February 20. Dr. C. E. Burford, St. Louis, President, Missouri State Medical Association, spoke briefly of the life and work of Dr. Goodwin as follows:

We honor a fallen comrade, one who has worked long and faithfully under handicaps that few humans could endure. Only by having some worthy goal in view, now and then an individual becomes strong enough to pick up the obstacles which he could not throw aside and carry them triumphantly through life like laurel wreaths about his brow. This goal in the case of Dr. Goodwin was a better organized, better trained, better distributed medical profession in Missouri, that the sick and afflicted would not be left to the mercy of the incompetent and unscrupulous.

Dr. Edward Jewett Goodwin was born August 3, 1864, in Washington, Missouri. His father was in the hospital service during the Civil War and medical textbooks brought back by him served to increase a determination to study medicine, a decision Dr. Goodwin had made at the age of 12. He attended the public schools and Smith Academy in St. Louis. He graduated from Washington University School of Medicine in 1894 and seven of his classmates survive him. They are Dr. Orion W. Bedell, St. Louis; Dr. W. K. Porter, Turney, Missouri; Dr. A. S. E. Schierbaum, Mt. Angel, Oregon; Dr. A. G. Schlossstein, St. Louis; Dr. Horace

W. Soper, St. Louis; Dr. Albert Taussig, St. Louis, and Dr. George B. Tuttle, Boonville, New York.

He practiced medicine only about one year when an accident while alighting from a street car resulted in a paraplegia that totally incapacitated him for three years and made further practice of medicine impossible. He worked in the office of Dr. Paul Y. Tupper as stenographer and bookkeeper until he became Associate Editor of the *Interstate Medical Journal* in 1903. Dr. Tupper had been his preceptor in Medical School.

In 1902 Dr. Goodwin first became identified with the Missouri State Medical Association as Associate Recording Secretary and official reporter. He was elected Assistant Secretary in 1903 in which year the present system of organization was adopted to conform with the new Constitution and By-Laws of the American Medical Association.

By successive steps he was made Associate Editor of *THE JOURNAL* in 1905, Editor in 1906 and Secretary-Editor in 1910. He was dean of secretaries and editors of state medical associations, having served longer in those capacities than has any other man in this country.

From 1903 to 1910 Dr. Goodwin was Associate Editor of the *Interstate Medical Journal* and in 1905 he published the book "Medicine in Missouri."

During the periods from 1909 to 1919 and from 1925 to 1935 he served as delegate to the American Medical Association. His experience and influence in the American Medical Association fitted him for the valuable work he did in legislative matters affecting the public health in this state.

He was elected Secretary-Editor Emeritus of the Missouri State Medical Association in 1938.

His is a most worthy record of service and achievement.

Success in life has been described as an illusive ideal and as difficult of definition as a democracy. If constantly thinking of what one can put into life instead of what he can take from life, if to form a conception of public conscience and a code of public honor which leads him to think of what he can do for his community rather than what his community can do for him is the foundation of a successful life, then our dear friend laid well his foundation and on it erected a mansion that shall stand the storms of time.

I quote from Osler's farewell address to the medical profession of America in speaking of his ideals:

"To cultivate such a measure of equanimity as would enable me to bear success with humility, the affection of my friends without pride, and to be ready when the day of sorrow and grief comes to meet it with the courage befitting a man."

We cannot know what is in the innermost soul of a man, and it is not given to us to be the final judge even of our dearest friends, but Jesus said "by their works ye shall know them." Eddie Goodwin loved and served his fellow men. His good works live on among us. May his soul find peace with God who gave it being.

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## MISCELLANY

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### 1941 LEGISLATION

The following bills have been introduced in the House of Representatives by Dr. Emmett F. Cook, Buchanan County; Dr. J. A. Gray, Atchison County, and Dr. J. F. Harrison, Audrain County:

House Bill No. 61. Prohibiting the taking of examinations to practice any branch of the healing art except after examination in the Basic Sciences, Anatomy, Physiology, Chemistry, Bacteriology and Pathology, by a state board of examiners.

House Bill No. 62. Prohibiting the use by any person

licensed to practice medicine, surgery, dentistry, optometry, osteopathy, chiropractic, chiropody or veterinary surgery, or any two or more of such professions, and any person permitted to practice the curing, healing or remedying of ailments, defects or diseases of body or mind, from using the prefix "Doctor" or "Dr." in connection with his name in any letter, business card, advertisement, prescription blank, sign or public listing or display without affixing thereto suitable words or letters designating the degree held and representing the profession he is authorized to practice, making violation of the Act a misdemeanor and fixing the punishment therefor, and providing that the Act shall not apply to the use of said designation by doctors of letters, doctors of science, doctors of law, doctors of divinity, or doctors of philosophy not practicing the curing, healing or remedying of bodily or mental ailments, defects or diseases.

House Bill No. 63. Declaring that the practice of medicine or surgery by unlicensed persons or the doing, committing or continuing of acts prohibited by Section 9988, Revised Statutes of Missouri, 1939, is inimical to public health and constitutes a public nuisance and also authorizing Circuit Court injunction proceedings by the Attorney General, Circuit or Prosecuting Attorneys in the name of the State or by the State Board of Health in its own name to enjoin such practice or attempted practice and such acts or attempted acts; prescribing the venue, practice and procedure in such actions; providing that such injunction may issue without proof of present or future damage; prohibiting temporary injunctions pursuant to this Act; and providing that such proceedings under this Act are in addition to and not in lieu of proceedings to revoke licenses to practice medicine and surgery or criminal proceedings against and punishment of such persons.

House Bill No. 64. Requiring every person licensed to practice medicine or surgery in this State to register biennially with the State Board of Health, providing for the method of application and the fees for such registration, the issuance of certificates of registration, and display of the same, requiring the State Board of Health to be notified of changes in the location of the registrant's office, requiring retired licensed practitioners of medicine and surgery to file affidavits with the State Board of Health in lieu of annual registration, providing for the disposal of registration fees and penalties for failure to register. (Registration fee \$1.00 per biennium.)

House Bill No. 67. Amending Section 9983, Article 1, Chapter 59, of the Revised Statutes of Missouri, 1939, relating to the examination and qualifications of applicants to practice medicine or surgery in this state by omitting the period after the word "equivalent" in line 15 of said Section and by inserting at the end of said line the following: "and satisfactory evidence of completion of premedical education consisting of a minimum of 60 semester hours of college credit in acceptable subjects from a reputable college or university approved by said Board."

All of these bills introduced in the House were referred to the Committee on Public Health.

Senate Bill No. 7. Introduced by Senator Michael Kinney, St. Louis. Providing for liens in favor of public and charity-supported private hospitals, clinics and other institutions for the care of the sick, furnishing care, treatment and maintenance to persons injured by the negligence or wrongful act of others, upon the rights of action, claims or demands of such injured persons against the persons causing such injury, for damage on account of such injury, and upon the proceeds of any settlement of any such right of action, claim or demand; and providing for notice of and the enforcement of such liens.

This bill has been referred to the Committee on Judiciary.

Senate Bill No. 15. Introduced by Senator Allen McReynolds, Carthage. To further the control of congenital syphilis by requiring a serological blood test for syphilis in pregnant women, requiring the filling out of reports to the State Department of Health, setting up supervisions necessary to protect the health of the mother and child, and provide a penalty for failure or refusal to observe the law.

This bill has been referred to the Committee on Public Health.

### THE PHYSICIAN'S INCOME TAX—1941

The following material on the Federal Income Tax Law is reprinted from the *Journal of the American Medical Association*, issue of February 1, 1941, and information on the Missouri law was furnished by the St. Louis office of the Auditor of the State of Missouri.

Everyone who is required to make a federal income tax return must do so on or before March 15, unless an extension of time for filing his return has been granted. For cause shown, the collector of internal revenue for the district in which the taxpayer files his return may grant such an extension, on application filed with him by the taxpayer. This application must state fully the causes for the delay. Failure to make a return may subject the taxpayer to a penalty of 25 per cent of the amount of the tax due.

The normal rate of tax on residents of the United States and on all citizens of the United States regardless of their places of residence is 4 per cent on net income in excess of the exemptions and credits. The Revenue Act of 1940 imposes an additional tax, designated as a defense tax, which in general adds 10 per cent to the amount of tax a person otherwise would be required to pay.

Attention again is called to the provisions of the Public Salary Tax Act of 1939, which subjects to the federal income tax laws the income derived from personal services rendered as an officer or employee of a state, political subdivision, or any agency or instrumentality of either. Theretofore, such income had been considered nontaxable under the federal income tax laws if received for services rendered in carrying out a governmental function. Furthermore, the federal government, under that act, consented to the taxation of states by local taxing authorities of compensation received for personal service as an officer or employee of the United States, any territory or possession or political subdivision, the District of Columbia or any agency or instrumentality of any one or more of the foregoing, if such taxation does not discriminate against such officer or employee because of the source of such compensation. In effect, this act does away with the immunity from federal income taxes theretofore accorded employees of states, their political subdivisions, agencies or instrumentalities and the immunity from state and local taxes of the income received by federal officers or employees.

#### WHO MUST FILE RETURNS

1. Returns must be filed by every unmarried person and by every married person not living with spouse, if gross income during 1940 was \$800 or more.

2. Returns must be filed by every married person who lived with spouse, if gross income during 1940 was \$2,000 or over. If both husband and wife had income and their combined gross income was \$2,000 or over, they must either file separate returns or, if both are citizens or residents of the United States and if they were living together at the end of the taxable year, they may file a joint return. If a person was married and lived with spouse for only part of 1940, special rules apply with respect to the filing of returns, and physicians who come within this classification should read carefully the instructions given on the tax return blanks.

If the status of a taxpayer, so far as it affects the per-

sonal exemption or credit for dependents, changed during the year, the personal exemption and credit must be apportioned, under rules and regulations prescribed by the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury, in accordance with the number of months before and after such change. For the purpose of such apportionment a fractional part of a month should be disregarded unless it amounts to more than half a month, in which case it is to be considered as a month.

As a matter of courtesy only, blanks for returns are sent to taxpayers by the collectors of internal revenue, without request. Failure to receive a blank does not excuse anyone from making a return; the taxpayer should obtain the necessary blank from the local collector of internal revenue.

The following discussion covers only matters relating specifically to physicians. Full information concerning questions of general interest may be obtained from the official return blank and from the collectors of internal revenue.

#### GROSS AND NET INCOMES: WHAT THEY ARE

**Gross Income.**—A physician's gross income is the total amount of money received by him during the year for professional services, regardless of the time when the services were rendered for which the money was paid, plus such money as he has received as profits from investments and speculation and as compensation and profits from other sources.

**Net Income.**—Certain professional expenses and the expenses of carrying on any enterprise in which the physician may be engaged for gain may be subtracted as "deductions" from the gross income, to determine the net income on which the tax is to be paid. An "exemption" is allowed, the amount depending on the taxpayer's marital status during the tax year as stated before. These matters are fully covered in the instructions on the tax return blanks.

**Earned Income.**—In computing the normal tax, but not the surtax, there may be subtracted from net income from all sources an amount equal to 10 per cent of the earned net income, except that the amount so subtracted shall in no case exceed 10 per cent of the net income from all sources. Earned income means professional fees, salaries and wages received as compensation for personal services, as distinguished from receipts from other sources.

The first \$3,000 of a physician's net income from all sources may be regarded under the law as earned net income, whether it was or was not in fact earned within the meaning set forth in the preceding paragraph. Net income in excess of \$3,000 may not be claimed as earned unless it in fact comes within that category. No physician may claim as earned net income any income in excess of \$14,000.

#### DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The taxpayer should make no claim for the deduction of expenses unless he is prepared to prove the expenditure by competent evidence. So far as practicable, accurate itemized records should be kept of expenses and substantiating evidence should be carefully preserved. The following statement shows what such deductible expenses are and how they are to be computed:

**Office Rent.**—Office rent is deductible. If a physician rents an office for professional purposes alone, the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes, he may deduct a part of the rental fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in such dwelling house or apartment, he may not, however, deduct any part of the rent of such house or apartment as professional expense; to entitle him to

such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct the amount so charged.

**Office Maintenance.**—Expenditures for office maintenance, as for heating, lighting, telephone service and the services of attendants, are deductible.

**Supplies.**—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs and chemicals. Professional journals may be classified as supplies and the subscription price deducted. Amounts currently expended for books, furniture and professional instruments and equipment, "the useful life of which is short," generally less than one year, may be deducted; but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

**Equipment.**—Equipment comprises property of a more or less permanent nature. It may ultimately wear out, deteriorate or become obsolete, but it is not in the ordinary sense of the word "consumed in the using."

The cost of equipment, such as has been described, for professional use, cannot be deducted as expense in the year acquired. Examples of this class of property are automobiles, office furniture, medical, surgical and laboratory equipment of more or less permanent nature, and instruments and appliances constituting a part of the physician's professional outfit, to be used over a considerable period of time, generally over one year. Books of more or less permanent nature are regarded as equipment and the purchase price is therefore not deductible.

Although the cost of such equipment is not deductible in the year acquired, nevertheless it may be recovered through depreciation reductions taken year by year over its useful life, as described later.

No hard and fast rule can be laid down as to what part of the cost of equipment is deductible each year as depreciation. The amount depends to some extent on the nature of the property and on the extent and character of its use. The length of its useful life should be the primary consideration. The most that can be done is to suggest certain average or normal rates of depreciation for each of several classes of articles and to leave to the taxpayer the modification of the suggested rates as the circumstances of his particular case may dictate. As fair, normal or average rates of depreciation, the following have been suggested: automobiles, 25 per cent a year; ordinary medical libraries, x-ray equipment, physical therapy equipment, electrical sterilizers, surgical instruments and diagnostic apparatus, 10 per cent a year; office furniture, 5 per cent a year.

The principle governing the determination of all rates of depreciation is that the total amount claimed by the taxpayer as depreciation during the life of the article, plus the salvage value of the article at the end of its useful life, shall not be greater than its purchase price or, if purchased before March 1913, either its fair market value as of that date or its original cost, whichever may be greater. The physician must in good faith use his best judgment and claim only such allowance for depreciation as the facts justify. The estimate of useful life, on which the rate of depreciation is based, should be carefully considered in his individual case.

In a Treasury Decision, approved February 28, 1934, No. 4422, it was held, among other things, that:

1. The cost to be recovered shall be charged off over the useful life of the property.

2. The reasonableness of any claim for depreciation shall be determined on the conditions known to exist at the end of the period for which the return was made.

3. Where the cost or other basis of the property has been recovered through depreciation or other allow-

ances, no further deduction for depreciation shall be allowed.

4. The burden of proof will rest on the taxpayer to sustain the deduction claimed.

5. The deduction for depreciation in respect to any depreciable property for any taxable year shall be limited to such ratable amount as may reasonably be considered necessary to recover during the remaining life of the property the unrecovered cost or other basis.

Particular attention is called to the last of the foregoing provisions. If, in prior years, rates have been claimed which, if continued, will fully depreciate the cost, less salvage, before the end of its useful life, based on conditions now known, a reestimate of the remaining useful life should now be made and the portion of the cost that had not been depreciated at the beginning of the year 1940 (for a return for the year 1940) should be spread over this reestimated life.

**Medical Dues.**—Dues paid to societies of a strictly professional character are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are personal expenses and not deductible.

**Postgraduate Study.**—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

**Traveling Expenses.**—Traveling expenses, including amounts paid for transportation, meals and lodging, necessarily incurred in professional visits to patients and in attending medical meetings for a professional purpose, are deductible.

**Automobiles.**—Payment for an automobile is a payment for permanent equipment and is not deductible. The cost of operation and repair, and loss through depreciation, are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeurs' wages, and the like.

Deductible loss through depreciation of an automobile is the actual diminution in value resulting from obsolescence and use and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years, the series must extend over the entire estimated life of the car, not merely over the period in which the car is possessed by the present taxpayer.

If an automobile is used for professional and also for personal purposes—as when used by the physician partly for recreation, or so used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot deduct depreciation or operating expenses; he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood. What has been said in respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

#### MISCELLANEOUS

**Contributions to Charitable Organizations.**—For detailed information with respect to the deductibility of charitable contributions generally, physicians should consult the official return blank or obtain information from the collectors of internal revenue or from other reliable sources. A physician may not, however, deduct as a charitable contribution the value of services rendered an organization operated for charitable purposes.

**Social Security Taxes.**—The excise taxes imposed on employers by section 804, title VIII, and section 901, title IX, of the Social Security Act, commonly referred to as old age and unemployment benefit taxes, are deductible annually by employers in computing net income for federal income tax purposes. If the taxpayer's return is made on a cash basis, as are the returns of practically all physicians, the taxes are deductible for

the year in which they are actually paid. If the return is made on an accrual basis, the taxes are deductible for the year in which they accrue, irrespective of when they are actually paid. Employees, including physicians whose employment brings them within that category, may not deduct the tax imposed on them by section 801, title VIII, of the Social Security Act, generally referred to as the old age benefits tax. If, however, the employer assumes payment of the employee's tax and does not withhold the amount of the tax from the employee's wages, the amount of the tax so assumed may be deducted by the employer, not as a tax paid but as an ordinary business expense.

**Laboratory Expenses.**—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

**Losses by Fire or Other Causes.**—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible, however, only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

**Insurance Premiums.**—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice, against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

**Expense in Defending Malpractice Suits.**—Expense incurred in the defense of a suit for malpractice is deductible as a business expense.

**Sale of Spectacles.**—Oculists who furnish spectacles, etc., may charge as income money received from such sales and deduct as an expense the cost of the article sold. Entries on the physician's account books should in such cases show charges for services separate and apart from charges for spectacles, etc.

### Missouri Income Tax

Returns should be filed by March 15, 1941. Failure to file by that time subjects the taxpayer to a penalty which is his tax being doubled. A verified copy of the federal return filed should be attached to the Missouri State Income Tax return. Returns should be filed with the City Assessor of St. Louis or, for those who reside outside of St. Louis, the return should be filed with the assessor of the county in which he lives.

All income received with the exception of dividends from national banks located in the State of Missouri and interest on Liberty Bonds should be reported.

The personal exemption for married men is \$2,000. Single persons, head of a household, that is, supporting one or more persons under one roof, are entitled to an exemption of \$2,000. Single persons with no dependents are entitled to an exemption of \$1,000. For each dependent under 18 years of age, or mentally or physically incapable of self-support there is an additional exemption of \$200.

All expenses on automobiles used for business may be deducted; that is, gasoline, oil, garage rent, general upkeep and depreciation. Office expense may all be deducted including salaries and wages, material and

supplies, rent, repairs, light, heat, electricity, towel service, telephone or whatever is involved in keeping up the office.

Subscriptions to all medical journals and dues to all medical societies are deductible as well as interest paid, taxes, losses by fire, storm or theft not compensated for by insurance. All donations to organized charities can be deducted but this amount is not to exceed 15 per cent of the net income shown on the return. A deduction of 1 per cent of the gross income may be made as sales tax paid.

### RECOVERY OF CASE OF RARE INFECTION REPORTED DUE TO SULFAPYRIDINE

Sulfapyridine treatment resulted in the recovery of a patient with a rare type of blood stream infection, due to the bacteria, *Bacteroides*, heretofore an almost invariably fatal condition, Alex E. Brown, M.D., Henry L. Williams, M.D., and Wallace E. Herrell, M.D., Rochester, Minn., report in *The Journal of the American Medical Association* for February 1.

The authors say that the use of sulfapyridine is of particular interest inasmuch as the sulfamido compounds have been considered not to be particularly effective against anaerobic (thriving best without air) organisms. Also, contrary to the authors' previous experience with the condition, the infection in the case they report was primary in nature and not superimposed on a chronic disease process.

### INDUSTRIAL HYGIENE FOR CIVILIANS EMPLOYED IN NAVY YARDS

Much of the loss of time among civilian employees in navy yards due to preventable illness can be greatly reduced if the problem is attacked by an annual physical examination of all employees, men requiring curative treatment being referred to their private physicians or to other agencies, Captain Ernest W. Brown, M.D., New York, Medical Corps, United States Navy, declares in an article on "Industrial Hygiene and the Navy in National Defense," appearing in the first issue of *War Medicine*, the new bimonthly periodical being published by the American Medical Association, Chicago, in cooperation with a division of the National Research Council, Washington, D. C.

The inauguration of such a program, Captain Brown says, would obviously require a heavy increase in medical staffs "but it would be a profitable investment by naval industry in the saving of a man power for national defense."

The importance of industrial hygiene has been recognized by the Navy, Captain Brown says, and it now is listed as a specialty of the naval medical officer along with other specialties outside the purely clinical fields, such as aviation medicine, submarine medicine and chemical warfare medicine. His paper outlines the administration of industrial hygiene in navy yards, which are the chief industrial units of the Navy.

Some conception of the extent of the problem of industrial hygiene in relationship to the naval establishment is obtained from Captain Brown's statement that "the combined industrial force of all navy yards is now approximately 130,000. In view of the building program of naval construction it is estimated that this number will reach 150,000 in 1941. If made inclusive of all shore stations it will probably be close to 180,000." He also points out that there is an adjunct to this force involving the commercial navy ship building plants and says that a conservative estimate of the combined industrial personnel of all such plants on both the east and the west coast will reach a peak of 100,000.

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL  
MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

- Chariton County Medical Society, December 2, 1940.  
Montgomery County Medical Society, December 2, 1940.  
Perry County Medical Society, December 14, 1940.  
Ste. Genevieve County Medical Society, December 17, 1940.  
Camden County Medical Society, January 7, 1941.  
Andrew County Medical Society, January 9, 1941.  
Benton County Medical Society, January 28, 1941.  
Clinton County Medical Society, February 6, 1941.  
Holt County Medical Society, February 8, 1941.  
Macon County Medical Society, February 15, 1941.  
Moniteau County Medical Society, February 15, 1941.

ASSOCIATE EDITORS: COUNCILORS OF THE  
TEN COUNCILOR DISTRICTS

#### FIRST COUNCILOR DISTRICT

A. S. BRISTOW, PRINCETON, COUNCILOR  
Nodaway-Atchison-Gentry-Worth Counties  
Medical Society

The Nodaway-Atchison-Gentry-Worth Counties Medical Society held a dinner meeting at the Linville Hotel, Maryville, February 3, with the president, Dr. Samuel E. Simpson, Stanberry, presiding.

Members present were Drs. Francis R. Anthony, Charles T. Bell, J. A. Bloomer, Carlos E. Cossins, Leslie E. Dean, Loren E. Egley, William R. Jackson, Robert C. Person and William Wallis, Jr., Maryville; B. F. Byland, Burlington Junction; Charles D. Humbert, Barnard; Joseph C. Manning, Skidmore; J. M. Broyles, Conception Junction; Henry C. Bauman, Fairfax; John M. Davis, Charles H. Flynn and Clifton M. Waugh, Tarkio; Emmett B. Settle, Rock Port; Samuel E. Simpson, Stanberry, and Frank H. Rose, Albany.

Programs and methods for increasing attendance at meetings in 1941 were discussed.

The fee schedule of the Farm Security Administration was discussed but no action was taken.

CHARLES D. HUMBERD, M.D., Secretary.

#### SECOND COUNCILOR DISTRICT

H. B. GOODRICH, HANNIBAL, COUNCILOR  
Randolph-Monroe County Medical Society

The Randolph-Monroe County Medical Society met January 14 in the clubroom of the Hart Cafe, Moberly. Because of bad weather and a great deal of sickness the attendance was small.

Dr. E. V. Davis, Kirksville, gave an interesting and instructive talk outlining the plan that the government is suggesting for indigent patients in regard to syphilis and pneumonia.

Dr. F. L. McCormick, Moberly, reported on the meeting of presidents and secretaries of county societies at Jefferson City on December 22.

Dr. P. V. Dreyer, Huntsville, reported that the F. S. A. had paid 78 per cent of its bills for 1940.

Those present were Drs. H. C. Griffiths, L. O. Nickell, L. E. Huber, W. M. Kitchen, E. W. Shrader and F. L. McCormick, Moberly; P. V. Dreyer, Huntsville, and E. V. Davis, Kirksville.

F. L. McCORMICK, M.D., Secretary.

#### FIFTH COUNCILOR DISTRICT

W. A. BLOOM, FAYETTE, COUNCILOR

Howard County Medical Society

The Howard and Cooper Counties Medical Societies held a joint meeting at Hotel Howard, Fayette, on January 15. Visitors were present from Columbia, Higginsville, Salisbury and Fulton.

Dr. W. B. Kitchen, Glasgow, president of the Howard County Medical Society, presided at the dinner which twenty-five members and guests attended.

Following the dinner, the group was joined by the nursing staff of Lee Hospital and the premedic class of Central College with their adviser, Dr. K. P. Stevens.

Dr. Roland M. Klemme, St. Louis, was introduced by Dr. W. A. Bloom, Fayette, Councilor of the Fifth District. Dr. Klemme gave an illustrated talk on "Diagnosis and Treatment of Head Injuries." An animated discussion followed this excellent presentation.

WM. J. SHAW, M.D., Secretary.

#### SIXTH COUNCILOR DISTRICT

A. J. CAMPBELL, SEDALIA, COUNCILOR

Bates County Medical Society

The Bates County Medical Society met at Butler, January 23.

The following officers were elected: President, Dr. Charles A. Lusk, Jr., Butler; secretary and treasurer, Dr. A. L. Hanson, Appleton City; delegate, Dr. Claude J. Allen, Rich Hill; alternate, Dr. Rollin H. Smith, Rich Hill; legislative representative, Dr. Rollin H. Smith, Rich Hill.

A. L. HANSON, M.D., Secretary.

#### TENTH COUNCILOR DISTRICT

E. J. NIENSTEDT, SIKESTON, COUNCILOR

St. Francois-Iron-Madison-Washington-Reynolds  
County Medical Society

The St. Francois-Iron-Madison-Washington-Reynolds County Medical Society met at the St. Francois County Courthouse, Farmington, January 31, at 7:30 p. m.

Dr. Carl F. Vohs, St. Louis, gave an interesting talk on "Posture and Attended Orthopedic Conditions" showing the results of therapy by comparative x-rays.

Following his paper, Dr. Vohs conducted an informal round table discussion on numerous phases of "Medical Economics."

Members present were Drs. Reuben Appleberry, C. C. Ault, F. R. Crouch, G. Tivis Graves, N. W. Hawkins, Emmett F. Hooter, James R. Mulkey, Farmington; Moses B. Barber, W. Harry Barron, E. M. Bryan, Shelby C. Slaughter, Fredericktown; Frank W. Gale, Bismarck; J. W. Hunt, Leadwood; Paul L. Jones, Flat River; H. M. Roebber, David E. Smith, Van W. Taylor, Bonne Terre; John P. Yeargain, Irondale.

G. TIVIS GRAVES, M.D., Secretary.

## BOOKS FOR LEISURE MOMENTS

### NATURALNESS AND CHILDBEARING

Florence Powdermaker is a psychiatrist, Louise Ireland Grimes a multiple mother. Together they have written "Children in the Family" (Farrar & Rinehart, New York), one of the soundest contributions to the rearing of children published recently.

Naturalness is the distinguishing characteristic of the authors' advices. They include no stilted axioms. A sensitive appreciation for the motivation of the child as well as the attitude of the parent combine to form a workable, readable, usable text for parent, teacher or physician.

During recent years the importance of the individual's emotional rapport with society has been increasingly recognized as of more importance to the attainment of happiness than physical or intellectual superiority. Since emotional restraining is never a simple matter after the first few years of life, this conditioning process must be undertaken in the home.

But the parent may look upon the child's immature curiosity as sinful and build up within him a set of conditioned responses which prevent his natural participation in the social group. He may seek the acme of perfection in the child without any awareness of the weakness of his own being. Such a parent fails to recognize that children are human beings whose actions are but reactions to the imperfections of adults. Powdermaker and Grimes clarify the role of the environment as a force in the responses of the developing child.

"Children in the Family" is deserving of wide study. It is eminently balanced in point of view. It is of vast potentiality in adding to the personal happiness and social accomplishment of the coming generation.

B. Y. G.

### THE PIONEER PEDIATRICIAN

L. Emmett Holt, so his son and R. L. Duffus advise in a biography bearing his name as title (D. Appleton-Century Co., New York), was the first physician in this country to recognize pediatrics as a specialty and was among the leaders in advancing it to a high plane in the present social structure. It is generally agreed that the senior Holt's "The Care and Feeding of Children" played a part in the education of American mothers equal to the part that "The Diseases of Infancy and Childhood" played in the education of American physicians. The former volume has already gone through seventy-five printings and been translated into several foreign languages.

The biographers, rather than developing a picture of the man, have interspersed many of his letters with little continuity and give a calendar of his life instead of the flavor of his being.

B. Y. G.

### MANNERS AND THE CHILD

Emily Post, whose name is a byword of social procedure, turns her hand to a consideration of the procedures which will insure a socially adequate child in "Children Are People" (Funk & Wagnalls, New York). The motivation is admirable but the vehicle is not likely to realize the manifest intention of the author. Her comments generally are sound but they lack the profundity of prolonged observation and experience. Nearly half the volume is taken up with the rules of conduct. Her present effort is a guide book for both parents and the adolescent who seeks a place in social life. Being addressed to more than one group, it can serve neither to the greatest possible extent. B. Y. G.

### HOME DIORAMA

Dr. Arthur E. Hertzler, Halstead, Kansas, one of the elder statesmen of American medicine, contributes from the loom of his experience "The Doctor and His Patients" (Harper & Bros., New York). The experiences of which he writes could be duplicated in the practice of any physician; yet, he does not write as most other physicians might have written. His book is a mixture of bitter irony leavened by salty humor. He makes vitriolic attack upon religion yet one cannot escape the conclusion that he is deeply religious.

Among Hertzler's primary concerns in the present volume are those forces which make or mar the life of the child. He traces the genesis of the scars which can eventuate in criminal or saintly career. But he is more concerned with the child than with the inherent or acquired motivation which gives the child his being.

He has overlooked the vital part that education, individually applied and individually molded, is capable of playing in the elaboration of whole personalities although he hints at this in the suggestion that the pastor, the physician and the judge should unite in charting the course of marriage and in seeing to it that it endures. His book should prove provocative of thought but its bitterness may preclude it from the attention of a large audience.

B. Y. G.

## BOOK REVIEWS

GETTING READY TO BE A MOTHER. By Carolyn Conant Van Blarcom. Revised by Hazel Corbin, General Director Maternity Center Association. Fourth edition. New York: The Macmillan Company. 1940. Price \$2.50.

Many improvements have been made in the third edition that make the book easier and more understandable reading for the layman, particularly with so many accurate illustrations and cuts.

The chapters on prenatal attitude and advice are clear, concise and are written in story form rather than as textbook didactic teaching. The anatomy and physiology is explained in laymen's terms and comparisons are made that give a picture of the reproductive system to the mother.

Nutrition is a field in obstetrics that affects both mother and infant. In this day, one is inclined to take this as something everyone should know. I think an inclusive diet containing all vitamins and minerals and computed on a basis of calories would be a valuable addition to this chapter.

On choosing the physician and hospital, I would suggest, instead of the information the book gives, that the patient call the medical society about the qualifications of the doctor. There are many babies being delivered today by men who do not limit their practice to that

one field and this book gives the impression that unless a man is a certified obstetrician he is of no value.

There are many practical helps for choosing the proper medicines, clothes and diapers that the baby will need and these are well discussed, particularly the baby's feeding.

There are a few anatomy illustrations, for instance of the birth canal. I do not think these are of particular benefit here and only tend to frighten the mother.

As a whole, I would say the book is written with a professional air and could be recommended to patients without fear of any false ideas being instilled in the patient's mind.

J. A. B.

**COMPLETE GUIDE FOR THE DEAFENED.** By A. F. Niemoeller, A.B., M.A., B.S., Author of "Handbook of Hearing Aids," etc. With a Foreword by Harold Hays, M.D., F.A.C.S., Author of "The Modern Conception of Deafness," etc. New York: The Harvest House. 1940. Price \$3.00.

This medium sized volume is intended to be read by the deaf and hard of hearing, especially the latter group. Much of the work would be readily understood by the layman but, as in many matters, "a little knowledge is a dangerous thing."

The book is divided into seventy-seven short chapters and touches on numerous ear conditions as well as means of adjustment of the deafened to inevitable circumstances. The first group of chapters comprising over half of the book is devoted to pathological ear conditions—their description, etiology, means of prevention and even treatment. Although in many parts of the book patients with ear complaints are urged to see a physician or otologist and self treatment is decried, yet, paralleling such sound advice, methods of self treatment are given in detail. Such instructions are found throughout the book.

In addition, there seems to be a wrong emphasis on consultations and the patient is told what the physician should do, all of which may make it difficult for some honest physician to manage a case.

The latter part of the book comprising between a third and a half presents the kind of material that one would expect from the title, "Complete Guide for the Deafened." In this section is much valuable information and advice in regard to means of living a fuller life, lip reading, hearing aids, how to enjoy the radio, the movies, sermons, the home life, employment, organizations for the hard of hearing and personal adjustment in general.

The book might be a real help to some hard-of-hearing patients but there is so much looseness in parts that I would not put it in the hands of my patients.

H. H. B.

**METHODS FOR DIAGNOSTIC BACTERIOLOGY.** A Complete Guide for the Isolation and Identification of Pathogenic Bacteria for Medical Bacteriology Laboratories. By Isabelle G. Schaub, A.B., Assistant in Bacteriology, Department of Pathology and Bacteriology, The Johns Hopkins University School of Medicine, and M. Kathleen Foley, A.B., Bacteriologist in Charge of the Diagnostic Bacteriological Laboratory of the Medical Clinic. The Johns Hopkins Hospital, Baltimore, St. Louis: The C. V. Mosby Company. 1940. Price \$3.00.

This book is exactly what its title implies, a textbook for laboratory bacteriological diagnosis written by laboratory technicians. Since the authors are engaged in practical diagnostic bacteriological work they know what is wanted in this field and have set it forth succinctly in a form that is simple and complete.

There is little more that can be said except that it is well worth the price to have such a concise manual to turn to rather than to search through the thousand pages of one of the larger laboratory diagnostic tomes

when one wishes guidance in a hurry. Blank pages are provided for the worker to insert new methods as they may arise.

R. L. T.

**MEDICAL DISEASES OF WAR.** By Sir Arthur Hurst, M.A., D.M., Oxon, F.R.C.P., Lieutenant-Colonel. Late R.A.M.C.; Consulting Physician to Guy's Hospital and Late Officer Commanding Seale Hayne Hospital for Functional Nervous Disorders, etc. With the co-operation of H. W. Barber, M.A., M.B., Cantab., F.R.C.P., Physician-in-Charge of the Skin Department, Guy's Hospital, F. A. Knott, M.D., Lond., M.R.C.P., Bacteriologist to Guy's Hospital, and T. A. Ross, M.D., Edin., F.R.C.P., Late Medical Director of the Cassel Hospital for Functional Nervous Disorders. Baltimore: The Williams & Wilkins Company. 1940. Price \$5.50.

While all cases reported deal with diseases occurring during the World War of 1914 to 1918, there are some references to the hearings that these might have on the war raging at the present time. The first 155 pages of this 327 page book, deal entirely with neuropsychiatric problems. The balance of the book takes up in orderly chapters the several infections to which soldiers are frequently exposed and some special topics such as war nephritis, soldiers heart, scabies, pediculosis corporis and gas poisoning.

The writers lay a lot of stress upon the hysterical or neurotic foundations. For instance the so-called "shell shock" is stressed as hereditary frequently. They also indicate that many of these patients were treated too long in the hospitals either in the rear of the front trenches or in the hospitals in England. They lay some stress upon hysterical contractions and the improper treatment which had been given to them. One large chapter is devoted to speech defect such as hysterical aphonia and hysterical stammering. For those reliance is placed upon suggestive therapeutics or hypnosis. They also stress the difficulty relative to the diagnosis and treatment of hysterical states involving deafness. They state that while some cases might have been mildly organic in the beginning, a neurosis or hysterical state followed. This same criticism holds for the so-called soldiers heart. They criticise the excessive smoking that has been permitted for these patients.

The book is well written, easy to read and should be of much value to medical men dealing with the modern, medical war problems. It also suggests the importance of a careful psychiatric and neurologic examination of all prospective soldiers or sailors.

A. L. S.

**THE TREATMENT OF DIABETES MELLITUS.** By Elliott P. Joslin, A.M., M.D., Sc.D., Medical Director, George F. Baker Clinic, New England Deaconess Hospital; Howard F. Root, M.D., Physician, New England Deaconess Hospital; Pricilla White, M.D., Physician, New England Deaconess Hospital, and Alexander Marble, A.M., M.D., Physician, New England Deaconess Hospital. Seventh edition, thoroughly revised. Illustrated. Philadelphia: Lea & Febiger. 1940. Price \$7.50.

The epochal discovery of Young pervades this new edition of the standard American text on diabetes. In it there is the accumulated wisdom which comes from having treated 19,000 diabetic patients over a period of almost fifty years, of having studied the patients and their disease, of having developed therapeutic principles which insured the continued health of this large group.

Joslin still prefers a moderate course of a diet in which the carbohydrate averages about 150 grams and which contains all of the essential nutrients, a body weight slightly below the normal, enough insulin to keep the blood sugar within normal limits. It is surprising to read that in the absence of infection the ordinary diabetic patient can be controlled with fewer

than 40 units of insulin. It may be that this is only another illustration of the excellence of the treatment of this outstanding clinician. Perhaps the one thing that may be asked of succeeding editions is more specific information on the management of the complications which characterize the course of diabetes.

B. Y. G.

**A TEXTBOOK OF CLINICAL PATHOLOGY.** Edited by Roy R. Kracke, Emory University, Georgia, and Francis P. Parker, Emory University, Georgia. Second edition. A William Wood Book. Baltimore: The Williams & Wilkins Company. 1940. Price \$6.00.

This is the second edition of a book that, although appearing originally only two years ago, has been thoroughly revised and added to in order to keep up with the rapid advance in new methods in clinical pathology. This book is designed as a comprehensive teaching manual for the subject of clinical pathology as well as a working manual for the interpretation of laboratory findings for the general practitioner.

As with any textbook to which a number of authors contribute, some chapters are somewhat easier reading than others, but a definite purpose obtains in this book. Emphasis on interpretation is stressed and single procedures considered as superior are described in detail.

The illustrations are numerous and well selected. This book is printed with good type on good quality paper. There are twenty-three full page color plates.

This book can be recommended as a worthy companion to the many other good texts on this subject.

R. L. T.

**THE INJURED BACK AND ITS TREATMENT.** Edited by John D. Ellis, M.D. Contributing Authors: H. Earle Conwell, M.D., Birmingham; Loyd Davis, M.D., Chicago; Nathan S. Davis, III, M.D., Chicago; John D. Ellis, M.D., Chicago; Ralph K. Ghormley, M.D., Rochester; Hale A. Haven, M.D., Seattle; Professor Sir Arthur Keith, F.R.C.S., F.R.S., London, and Robert B. Osgood, M.D., Boston. Springfield, Illinois, Baltimore, Maryland: Charles C. Thomas, Publishers. 1940. Price \$5.50.

This book is a collection of articles related to back pain. Taken as a whole it answers somewhat the need for a more comprehensive understanding by the general medical profession of the meaning of back pain and what can be done for it. The opening chapter on the evolution of man's posture brings out several points on which one's thoughts can dwell. The discussion of the routine examination of the injured back correlates the numerous signs and attempts to clarify their meaning. The discussion on management of recent compressed fractures of the vertebral bodies stresses the need for proper methods of transportation of the patient with a compression fracture of the vertebrae, the importance of associated injuries and, finally, a practical method of treatment is discussed in detail.

The relationship of the articular facets to back pain is treated in an interesting manner with the importance of proper x-rays emphasized. Posture and faulty body mechanics and their relationship to back pain are covered in all their ramifications, bringing out the important influence of proper body mechanics on health. The relationship of trauma to certain degenerative diseases and anomalies of the spine and the part these factors play in residual back pain following injury is discussed.

The chapters on the neurological aspects of back pain and referred pains are not clearly presented and do not emphasize their true relationship to back pain.

The concluding chapter on treatment leaves much to be desired but at least gives one a basis on which to start therapy in cases of low back pain.

As a whole the collection of papers is helpful in that more than one individual's viewpoint on this complex subject is presented. It is a book that can be read with profit by those not closely associated with the meaning of back pain and its treatment.

R. H. K.

**HEART FAILURE.** By Arthur M. Fishberg, M.D., Associate in Medicine, Mount Sinai Hospital, New York City. Second edition, thoroughly revised. Illustrated with 25 engravings. Philadelphia: Lea & Febiger. 1940. Price \$8.50.

In his second edition the author not only has revised his first edition thoroughly but has embodied the recent and rapid progress being made in the understanding, diagnosis and treatment of heart failure.

The book is readable. The descriptions, explanations and style of the writer enable one readily to form clear-cut mental pictures. The type is restful to the eye.

A few chapters at first might appear to be written in too much detail. However, what appears to be long drawn-out descriptions and explanations are really essential in visualizing clearly the progress made in the understanding of heart failure. The chapter, "Peripheral Circulatory Failure," is well worth serious meditation for its scope is broad and it contains a vast amount of knowledge.

This book, although written primarily for general practitioners, would be an asset to the libraries of specialists, internists and surgeons.

F. R. F.

**PRACTICAL MICROBIOLOGY AND PUBLIC HEALTH.** For Students of Medicine, Public Health, and General Bacteriology. By William Barnard Sharp, S.M., M.D., Ph.D., Professor of Bacteriology and Preventive Medicine in the Medical Department of the University of Texas, etc. Illustrated. St. Louis: The C. V. Mosby Company. 1938. Price \$4.50.

This book is designed to serve as an introductory laboratory manual for a course in medical bacteriology and public health. The book organizes the course with tables detailing when various exercises are to be started, the laboratory periods over which they are expected to extend and the time they are to be completed. It even gives instructions for practical quizzes to be given at intervals during the course.

The book is divided into seven sections. The first is concerned with elementary bacteriological technic and introduces the student to various groups of bacteria, spirilla and fungi. The two succeeding sections take up the pathogenic bacteria and fungi with emphasis on their laboratory diagnosis. The fourth section covers the fundamental concepts of immunity and the immunological technics in diagnostic use.

The fifth section takes up the procedures in use in public health laboratories. The next part is entitled "Public Health Field Work and Surveys" and contemplates inspection and study of various places which might become public health hazards such as dairy farms, slaughter houses, water supplies and also hospitals, private buildings and industrial establishments. The book next has exercises in vital statistics and epidemiology and touches on control of noncommunicable disease.

The final section is a study of animal parasites and disease vectors including the venomous reptiles and even mentioning such animals as the sting ray and the Portuguese man-of-war.

Although a laboratory manual, the book gives abundant explanation, enough so that its exercises could be intelligently followed and understood without supplementary information from other sources. It mentions only incidentally the virus and rickettsial diseases.

D. J. S.

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### THE CHALLENGE OF ACUTE APPENDICITIS

DIAGNOSTIC AND THERAPEUTIC DETAILS DESIGNED TO  
REDUCE MORTALITY, WITH SPECIAL REFERENCE  
TO THE "DELAYED" OPERATION

ROBERT ELMAN, M.D.

ST. LOUIS

The challenge of acute appendicitis is made because in this country, fifty years after the cause and treatment of acute appendicitis have been outlined by Fitz,<sup>1</sup> nearly 20,000 individuals die each year from the effects of this disease. Worse than this, the mortality rate from acute appendicitis rose steadily between the years 1910 and 1930; this is just as true of Missouri as of the entire registration area of the United States as shown by figure 1. Nearly all of these deaths could be prevented easily if proper and adequate early treatment were carried out. I need not repeat that the mortality of acute appendicitis occurs only in those cases in which the appendix has been allowed to perforate so that a local or general peritonitis has occurred. The challenge, therefore, is simply one of removing the acutely inflamed organ before it has had a chance to perforate. To do this the public must be educated but also the medical profession must educate itself. As to public education the danger of the indiscriminate use of cathartics must be taught. As is well known, catharsis increases the mortality from appendicitis nearly ten times. The public also must be taught that an ordinary "belly-ache" is not something to be treated casually but that it may be the first sign of serious trouble.

Nevertheless, it must be recognized that a good deal of the blame for the occurrence of peritonitis from rupture of an acute appendicitis may be placed at the door of the physician himself. I might cite a recent experience I had at one of the St. Louis city institutions about a year ago. The patient was an

8 year old child who had recovered completely from the condition for which she had been hospitalized and was ready to be discharged in excellent condition. At 9 o'clock one morning she complained to the nurse of pain in the right lower quadrant followed by nausea and vomiting. The intern saw the patient, examined the abdomen and recorded in his note that she had acute tenderness in the right lower quadrant with muscle spasm, a leukocytosis of 12,000; he made a definite diagnosis of acute appendicitis. But these were his next words: "Treatment—observation." The next morning the child's condition was much worse. I operated on her twenty-four hours after the onset of pain and found a ruptured appendix with a beginning diffuse peritonitis. Fortunately she recovered.

Utterly amazing to me was the fact that a recent graduate of a class A medical school could have made such a tragic error as to have recommended observation in a case of acute appendicitis which

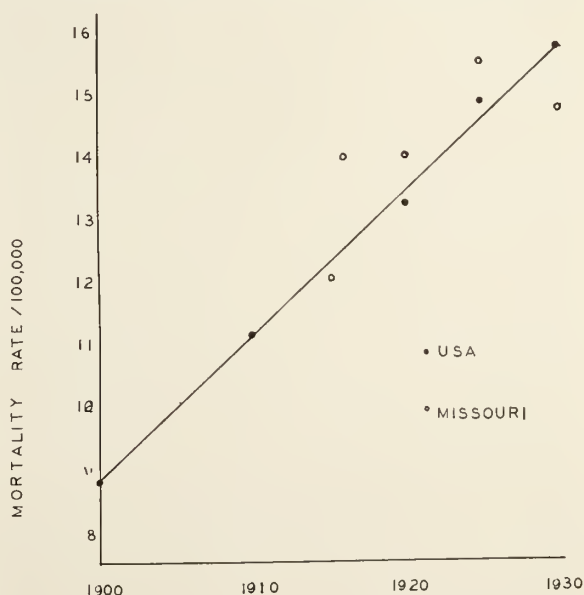


Fig. 1. The mortality rate from acute appendicitis in the registration area of the United States and in Missouri. Taken from the United States mortality tables.

Read at the 57th annual meeting of the Wabash Railway Surgical Society, St. Louis, September 23, 1940.

From the Department of Surgery, Washington University School of Medicine and Barnes, St. Louis Children's and St. Louis City Hospitals, St. Louis.

followed almost exactly the textbook picture. Unfortunately, this mistake is one which is made not infrequently in general practice throughout the state. I will take this matter up a little later in discussing what is known as the "delayed treatment" of peritonitis. Actually, of course, as all know well, there is no medical treatment for acute appendicitis. This was emphasized by Sir William Osler many decades ago. If there is any delayed treatment it is the delayed treatment of the complications of appendicitis; that is to say, peritonitis which really should never have been allowed to develop. Obviously, therefore, the first problem in meeting the challenge of acute appendicitis is that of diagnosis and differential diagnosis.

#### DIAGNOSIS

A great deal can be said about the diagnosis of acute appendicitis but here I can mention only a few salient points. This problem of diagnosis, of course, confronts the physician whenever he is called to see a patient with acute abdominal pain. It must be emphasized, first of all, that such a complaint obviously merits at least a careful history and abdominal examination. The great tendency to prescribe over the telephone undoubtedly has led to a good many cases of unexpected peritonitis. A careful history and bedside examination, in nearly all cases, will reveal one or more of the three most valuable manifestations of acute appendicitis. These three are: first, abdominal pain; second, nausea and vomiting and, third, localized tenderness and muscle spasm over the appendix. Of these three the last is undoubtedly the most important, especially when elicited by bimanual recto-abdominal and when indicated by vaginal palpation. Although the local signs may be slight or even absent in retrocecal and especially in gangrenous appendicitis, it remains, nevertheless, the most valuable single clinical guide. The results of a careful examination will be found positive more often in the few cases in which abdominal pain, nausea and vomiting are absent. Leukocytosis is of value only when present; its absence has no negative value. Fever is of little value in the diagnosis of acute appendicitis in its earliest stages, the time when the diagnosis really should be made. The habit of waiting for the development of fever before the diagnosis of acute appendicitis is made cannot be condemned too severely. In a few difficult cases I have found the use of a barium enema of considerable value by visualizing the cecum and even appendix and thus identifying the site of the local signs with great accuracy.

*Differential Diagnosis.*—In considering the differential diagnosis in a case of acute abdominal pain I could, of course, list all the diseases which produce abdominal pain. All have seen such lists and it is important to know them but it would take too long to mention them all. Let me merely divide them into three general groups only the last of which is surgical. First are the medical diseases

producing acute pain in which an operation may prove deleterious or even fatal, i. e., acute coronary disease, lobar pneumonia, nephritis, primary peritonitis, amebic dysentery and typhoid. The second group would comprise patients with medical diseases such as chronic constipation, spastic colitis, salpingitis and even pyelitis. Operation in this group would constitute a mistake but would carry no significant mortality. In the third group are the real surgical lesions including acute appendicitis, acute cholecystitis, intestinal obstruction, perforated peptic ulcer and perforated Meckel's diverticulum. A mistaken diagnosis will be of no significance in this group provided the surgeon makes an incision which enables him to recognize and correct whatever acute lesion may be present.

When confronted by a difficult diagnostic problem I like to approach it in this manner: I ask myself what will happen if the patient is operated on and what will happen if he is not. If he is operated on and an acute appendicitis found, or, if not operated on and he rapidly recovers or develops a non-surgical lesion, all is well. But suppose one makes a mistake; one may perform an operation when one should not have or may deny operation when it should have been done. There are thus two possible mistakes: one may decide not to do an operation and find that the patient develops a general peritonitis or, conversely, one may decide on operation and find that the patient has a normal appendix and no other lesion needing surgical attention. It is important to evaluate critically the relative seriousness of these two mistakes because one of them is really a bad mistake and the other is a "good" mistake. The first mistake is obviously a serious one because the mortality is high whenever the appendix perforates and produces a peritonitis. On the other hand, if one decides to operate on a patient and finds no lesion, it is a mistake which I would call a "good" one provided, of course, that the patient is not suffering from one of the serious diseases in the first group mentioned previously. If these diseases are excluded the removal of the appendix could be called a prophylactic appendectomy and as such is justified. It serves no useful purpose to find slight anatomical changes in such an appendix in order to justify the mistake. The frequent argument between the surgeon and the pathologist as to the significance of minor microscopic and even gross changes in such instances is usually futile. There is, however, a danger lurking here; prophylactic appendectomies should comprise but a small percentage of patients operated upon with a diagnosis of acute appendicitis. While one may be justified in making a "good" mistake they should be rare rather than frequent.

#### TREATMENT

There would be no problem of treatment if the challenge of acute appendicitis could be met by early diagnosis. As long as peritonitis from ruptured appendices occurs the problems of therapy

continue. Their solution affects decisively the mortality.

In discussing these problems I will not mention details of operative technic. The advantages and disadvantages of the McBurney over the right rectus incision seem relatively unimportant to me. Let me merely mention three significant surgical principles which should govern the technic of the operation itself: First, trauma to the abdominal wall is not nearly as important as intraperitoneal trauma; second, the incision should be made adequate in order to deal adequately with the intraperitoneal lesion; third, gentle surgery is nowhere more important than in a case of ruptured appendicitis with peritonitis. I view with horror the indiscriminate stuffing of gauze packs into the peritoneal cavity and unnecessary trauma to the small intestine.

The proper time for operation in appendiceal peritonitis is a very important question. In my opinion, the mere existence of peritonitis does not justify postponement of an emergency operation; on the other hand, very sick patients with peritonitis require delay for varying periods of time before operation is indicated. I can best express my own point of view by telling of experiences at the St. Louis Children's Hospital with operations for peritonitis due to ruptured appendices.<sup>2</sup> Figures on children give a pretty good idea of what the fundamental principles are because acute appendicitis in children is much more serious than in adults. The highest mortality was found in patients whose general condition was serious and almost critical and who were operated upon within a few hours after admission. On the other hand, patients who entered the hospital in fairly good condition had the lowest mortality if the operation was carried out at once; any delay in this group resulted in an increased mortality. And this is just what one would expect. Fundamentally, any perforative lesion which leads to a general peritonitis should be removed as soon as possible. The peritoneum can overcome a good deal of contamination and even infection provided the source is eliminated early, whereas, if the source continues the peritonitis is apt to be progressive and fatal. On the other hand, if the patient is in such poor general condition as to be unable to withstand a laparotomy it will be futile to eliminate the source of the peritonitis if the operation itself results in a fatal outcome. It is only in this last group that conservative measures are definitely indicated before an operation is justified.

If, during this delay, the peritonitis seems to be localizing or if the patient develops a mass in the right lower quadrant, the question arises as to how long such a delay may be justified. There is a tendency on the part of many surgeons to wait for such localized lesions to disappear of their own accord and then do an interval appendectomy later. Of this I can express only my most emphatic disagreement for several reasons. First, one cannot be sure that such an abscess will remain localized and disappear; there is a definite danger of its open-

ing and spreading to the rest of the peritoneal cavity at any moment. This is a serious event which I have seen occur in a number of cases. Second, one cannot be sure that the localized mass is actually an abscess. I have operated on a number of such patients and found the mass to consist merely of loops of small intestine and omentum which have become adherent to an acutely inflamed appendix which had not even ruptured but might have ruptured if the lesion had been observed a few days longer.

There is additional evidence against the policy of unqualified delay in ruptured appendices. It must be obvious to those who have seen a good many patients with acute appendicitis that it may be impossible to make a preoperative diagnosis of perforation. Even more difficult is the estimation of the extent and nature of the peritonitis which is presumed to be present; indeed, there may be differences of opinion even at the operating table as to the exact extent of the infection. A statistical study by Arkush and Kosky<sup>3</sup> is enlightening in this connection. They found that only 32 (or 42 per cent) of seventy-five patients with a preoperative diagnosis of ruptured appendices actually had such a lesion when the appendix reached the laboratory; the others were nearly all acute but unruptured. Thus, if the surgeon had adopted a policy of delayed operation because he thought the patient had a ruptured appendix, thirty-four or more of the seventy-five acutely inflamed appendices might have ruptured under his very eyes, so to speak. Fortunately, from the facts outlined previously it is really of no practical importance in therapy to decide whether the appendix is ruptured or not or, indeed, whether the peritonitis is local, spreading or diffuse. In other words, in deciding upon the question of operation the main concern is, first, has the patient acute appendicitis and, second, is the patient in sufficiently good shape to withstand appendectomy? If both questions can be answered in the affirmative the immediate emergency operation should be carried out. If the patient is too ill to withstand laparotomy preparatory measures must be carried out. How long will one delay in such a case? In a few patients twelve hours will be sufficient to correct dehydration, in others from twenty-four to seventy-two hours may be required to prepare the patient adequately. During this period the surgeon must examine the patient repeatedly and select the time for operation when the maximum benefit has been obtained from the conservative measures employed.

Of the nonoperative procedures of importance in the serious cases I would like to mention only three; first, the use of continuous gastric suction; second, the use of sulfanilamide and, third, the use of plasma transfusions. Continuous gastric lavage really is an efficient way of putting the bowel at rest because it prevents gastric juice from entering the duodenum. Moreover, it permits the ingestion of small amounts of ice or fluids or preferably cold

Ringer's solution which is appreciated by many patients. The use of such a tube automatically tells when food can be taken, i. e., if the tube is clamped and fluid is ingested without distress it is a sign that the gastrointestinal tract is ready to accept oral feeding. Needless to say, dehydration may occur because of continuous gastric lavage; this danger must be watched for and avoided by adequate parenteral use of water and electrolyte.<sup>4</sup>

Sulfanilamide is a powerful weapon in conquering the spread of infection and as such saves hundreds of lives from peritonitis due to acute appendicitis. It must be used intensively but with caution and only during the invasive stage of the infection; it is not effective in suppurative inflammation. In using sulfanilamide in general peritonitis, I employ large single doses on the first two or three days only, i. e., during the period of invasion. For an average sized adult 6 grams are added to the saline which is given subcutaneously and repeated the next day. If evidence of localization occurs it is especially important to stop the drug. Pus is a surgical lesion and sulfanilamide not only has no effect on pus but may have a deleterious one in masking its presence and in slowing up its natural tendency to point.

The kind of fluids given these patients is important and may be a decisive factor in the prognosis. While saline and glucose are both indicated to correct dehydration too much may be harmful unless the patient is excreting a normal amount of urine. As pointed out by Coller and Maddock<sup>4</sup> the urinary output is an excellent guide to the achievement of fluid balance. The excretion of from 1,000 to 1,500 cc. is to be expected in a normal sized adult with an adequate intake. If the urine output falls to 100 or 200 cc. fluid balance is disturbed and the continued injection of fluids, especially of saline, may prove deleterious. In many of these patients the serum protein will be found to be low. Hypoproteinemia will have to be corrected if fluid balance is to be restored and a fatal issue avoided. Blood transfusions or, better, plasma transfusions may prove life saving in these patients; as much as 10 cc. of plasma per kilogram of body weight may have to be injected and repeated in twenty-four hours.

#### SUMMARY

The challenge of acute appendicitis must be met in order to prevent, as far as possible, the 20,000 deaths each year in the United States due to the effects of this disease. First in importance is early diagnosis of acute appendicitis before rupture occurs; second is the prompt surgical therapy in patients with peritonitis by adequate preparation. Operation in acute appendicitis is an emergency procedure and is delayed only when the patient is extremely ill with evident general peritonitis and is unprepared for laparotomy. Unqualified delay in the surgical treatment of acute appendicitis is severely condemned.

Barnes Hospital.

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### INFLUENCE OF VITAMIN C THERAPY ON ARSENICAL SENSITIVITY

A. DENTON VAIL, M.D.

SPRINGFIELD, MO.

Since the introduction of arsenical therapy in the treatment of syphilis, undesirable reactions from the drug have been noted in various forms. Fortunately, the milder manifestations predominate with such complaints as nausea, vomiting, cramps, headache and diarrhea. Occasionally, however, the more severe, and at times even fatal, reactions occur such as nitritoid crises, dermatitis, jaundice, hepatitis and purpura.

A few years ago, when it was believed that a few treatments were sufficient to cure syphilis, one could perhaps overlook the disturbing effects of the medication because the course of treatment was of relatively short duration. In light of present concepts of adequate therapy, treatment must be continuous and prolonged. Anyone having the opportunity to observe large groups of patients under treatment must realize the obstacle to such a regime as the result of reactions to medication. Not infrequently patients complain bitterly of reaction to the administration of arsenicals and in many patients treatment produces nausea, vomiting, cramps or diarrhea of several days duration, during which time the patient may be partially or totally incapacitated. This results in a decided tendency on the part of many patients to absent themselves from treatment in an effort to avoid distress. When the more severe reactions are encountered, even though less frequent, they often require a complete cessation of therapy.

Since 1935 an extremely limited number of articles dealing with the relationship of vitamin C metabolism and arsenical sensitivity has appeared in the literature. The majority have dealt with studies conducted on guinea pigs or other laboratory animals and only a small number have reported any clinical studies as applied to human beings, the latter appearing entirely in the foreign literature. On reviewing this work, one is impressed with the indication that there probably may be an important and definite place for this vitamin as an adjunct to accepted methods in the treatment of syphilis. Because of these observations, this study was undertaken in an effort to investigate previous claims and to extend the in-

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vestigation to include, if possible, a comprehensive evaluation of this therapy as applied clinically to all the objectionable features of arsenical medication in the treatment of syphilis.

Sulzberger and Oser<sup>1</sup> in 1935 were first to establish a relationship between vitamin C and arsphenamine sensitization, reporting on studies on guinea pigs. They demonstrated that hypovitaminosis C increased the skin sensitization to arsphenamine and replacement of the vitamin deficiency inhibited this reaction in these animals. It was pointed out that more ascorbic acid was necessary to inhibit arsenical sensitization than to protect against scurvy. Chapman and Morrell<sup>2</sup> at the same time reported a study on guinea pigs and recorded that such sensitivity to neoarsphenamine is not developed in animals suffering from subacute scurvy. Their animals, which were receiving ascorbic acid in addition to an antiscorbutic diet, developed more severe reactions than those on an antiscorbutic diet alone. Dainow<sup>3</sup> in September 1935 was perhaps the first to report the effect of vitamin C on arsenical sensitivity in human beings. He also reported the first successful treatment of arsenical dermatitis with vitamin C. Two patients with arsenical intolerance (dermatitis) were treated with from 1 to 5 injections of 50 mgm. of ascorbic acid which produced prompt recovery. Three cases of dermatitis from salvarsan and one from gold also were treated successfully with vitamin C which, in one case, was given orally after the first injection. From these cases Dainow concluded that ascorbic acid would modify profoundly the clinical course of arsenical dermatitis and completely change its prognosis. Cormia<sup>4</sup> demonstrated that different brands of neoarsphenamine varied greatly in their power to cause cutaneous sensitization in guinea pigs fed on a diet high in vitamin C. This was followed by another study on guinea pigs<sup>5</sup> in which he concluded that a high vitamin C diet should be of value to all patients receiving an arsphenamine and particularly to those who had inadvertently received a paravenous injection. He also expressed the opinion that intensive therapy with ascorbic acid may be of value in patients with postarsphenamine dermatitis and also to such patients if at a later date further arsenical therapy is to be attempted. Dainow<sup>7</sup> in 1937 called attention to the fact that after arsenobenzene medication, the urine contains unknown reducing substances which react with dichlorophenolindophenol, iodine and methylene blue like ascorbic acid. Landfisch<sup>8</sup> in 1937 treated twenty-five patients, who were known from previous experience to be definitely sensitive to neoarsphenamine, by the addition of vitamin C intravenously or orally. Some were given .05 gm. in solution with the neoarsphenamine, some were given the vitamin dissolved in water half an hour before the administration of the neoarsphenamine with ascorbic acid tablets three times daily one day before or on the same day of the administration of the arsenical. Evidence of intolerance

disappeared in 80 per cent, the symptoms became insignificant in 16 per cent and one patient (4 per cent) remained intolerant. It was felt that the results warranted further consideration of the use of ascorbic acid as an auxiliary for lessening intolerance to neoarsphenamine. Dainow<sup>9</sup> in 1937 attempted to determine the mode of action of vitamin C in increasing the tolerance of the organism for arsenobenzenes and said "vitamin C unites with arsenobenzene in the living organism as it does in vitro. In an organism depleted of the vitamin, the combination is incomplete and the arsenobenzenes are not prevented from rapid oxidation in the tissues, hence their increased toxicity, which provokes untoward reactions." In this study he refutes the claim of Durel<sup>6</sup> that vitamin C reduces the therapeutic effect of the arsenical and states that the conclusions of Durel, whose work was with mice, are not applicable to human beings because hypovitaminosis C does not occur spontaneously in mice. To prove his point, six patients were treated with combined salvarsan and vitamin C and at the end of a single course five of the six were serologically and clinically negative. He stresses the importance of providing an adequate supply of vitamin C during antisyphilitic treatment. Friend and Marquis<sup>10</sup> conducted blood vitamin C studies on two groups of syphilitic patients. One group received arsenical therapy while the other did not. The differences in values for the two groups were so insignificant that the authors concluded that arsenical therapy, per se, does not lower the blood vitamin C content. Five patients showing reactions to arsenicals were found to have definitely lowered blood vitamin C values. It was further concluded that such lowering of the blood values was a result rather than a predisposing factor to such reactions. Montesano<sup>11</sup> offers an opinion differing slightly from that of Dainow on the mode of action of vitamin C. He believes that vitamin C, because of its great oxidation-reduction potential, shares in the detoxification of the arsenical in the tissues. He says that when the body is depleted of vitamin C, the arsenobenzole can not be broken down rapidly enough in the tissues and toxic products result. Dainow<sup>14</sup> discussed the role of the parasympathetic system in medicinal dermatitis and he believes that it plays an important part in the origin of these reactions, that part being dependent upon vitamin C. More recently Hyman et al.<sup>15</sup> in reporting the treatment of early syphilis by the massive dose, intravenous drip method, found that vitamin C did not prove of any value in protecting against secondary fever and toxicoderma. Moore and Mohr<sup>16</sup> review the relationship of vitamin C to arsenical reactions. For the sake of completeness these additional articles are suggested: Larue,<sup>12</sup> Baird,<sup>13</sup> Karolyi,<sup>17,18,20</sup> Diasconescu<sup>19</sup> and Bise.<sup>21</sup>

The final report on this study will include data obtained from a series of from thirty-five to fifty patients who have manifested minor evidences of arsenical sensitivity such as nausea, vomiting,

headache, chills, fever, cramps or diarrhea. It will also include a study of a number of patients who have had the more severe reactions including hepatitis, jaundice, purpura, dermatitis and severe nitritoid crises. Although the study is not complete at this time, it is felt that sufficient data have been obtained and the results sufficiently encouraging to warrant the presentation of this report at this time.

The work herein presented was begun on the premise that the undesirable reactions associated with arsenical therapy in the treatment of syphilis may be due to a lowered vitamin C content in the tissues of the organism. If this is true, the establishment of a normal vitamin C content should result in the elimination of these reactions.

As a first step, the Clinic\* patients, numbering approximately 300, were separated into two groups: those having no complaints and those having complaints referable to arsenical medication. It was found that the second group comprised 48 per cent of the entire Clinic group and, of these 98 per cent were female and 2 per cent male. This statement may be misleading. It is not to be inferred that all these patients were proved to be actually sensitive to arsenicals. As will be pointed out later, some of these complaints may have a psychic basis. This would not, however, account for all. Most significant at this time is the observation that such a large proportion of patients find arsenical therapy objectionable. No explanation can be offered now for the preponderance of women complainers.

From that portion of Clinic patients free from symptoms, a control group of ten patients was selected who had had at least twenty injections of neoarsphenamine without reaction of any kind. Weekly blood vitamin C determinations\*\* were made on this group over a period of from six to nine weeks. In order to eliminate any inaccuracies in blood values which might result from retained arsenic in the body, vitamin C determinations were made on all patients just prior to treatment. Blood vitamin C values were obtained by the macro-method of Farmer and Abt<sup>22</sup> which was modified by the use of metaphosphoric acid<sup>23</sup> as the deproteinizing agent instead of sodium tungstate, sulphuric acid mixture. These determinations (table 1) were made so as to overlap from one course of treatment to another and medication as given each time appears opposite the values of blood vitamin C obtained. It will be noted that no significant difference in values between males and females is apparent. All patients have values well within normal limits. The correlation of therapy with blood vitamin C levels illustrates quite clearly that the type of antisyphilitic treatment has no effect upon the blood values. Controls 3, 7, 8, 9 and 10

Table 1. Control Group. Serial Blood Vitamin C Values and Associated Therapy in Patients Having No Reaction to Arsenicals. Blood Values Obtained Weekly.

MALE					
1.	2.	3.	4.		
1.34-B	.96-N	.91-N	.84-B		
1.10-B	1.32-N	1.33-N	1.18-B		
1.28-B	1.00-N	1.32-N	.79-N		
1.26-N	1.61-N	1.02-N	.73-N		
1.17-N	1.61-N	.99-N	.83-N		
1.29-N	1.46-N	.87-B	1.08-N		
	1.48-B	.83-B	1.02-N		
	1.29-B	.92-B	.98-N		
		.98-B			
FEMALE					
5.	6.	7.	8.	9.	10.
.82-B	1.09-B	1.32-N	.99-N	.85-N	1.26-B
.90-B	1.10-N	1.55-N	1.24-N	.86-N	1.50-B
1.08-N	1.12-N	.75-N	1.32-N	.73-N	1.12-B
.95-N	.92-N	.85-N	1.56-N	.62-N	.99-N
.92-N	.85-N	.82-B	.87-N	.73-B	.76-N
.84-N	.95-N	.94-B	.95-B	.80-B	.84-N
.96-N	1.02-N		.94-B	.71-B	.85-N
			.89-B		.91-N

show a slight lowering of blood values as the series progresses. Since this reduction occurs with about equal frequency upon institution of arsenical or bismuth therapy, it is not considered significant. All Clinic patients are charity cases and most of them are on relief. Even in summer they undoubtedly have difficulty in obtaining a balanced diet. These determinations were begun in the fall so that the period marking the slight reduction in values may be correlated with advancement of the winter season, at which time the procuring of adequate amounts of fresh fruits and vegetables would be difficult for these people.

A group of fifteen patients who complained of reactions to neoarsphenamine in varying degrees was selected for study next. This group was subdivided into three groups of approximately equal numbers with the idea of instituting vitamin C therapy by the oral, intravenous or a combination of these two methods. Patients complaining of relatively minor symptoms were placed on oral therapy, those having more severe manifestations were given intravenous medication while those whose complaints indicated a rather severe reaction were given vitamin C by mouth and intravenously. Oral medication consisted of tablets of ascorbic acid (Cebione\*) with the dosage varying between 50 and 100 mgm. daily in different individuals. Intravenous medication consisted of the inclusion of 100 mgm. crystalline ascorbic acid in each 10 cc. of solution containing neoarsphenamine .6 gm., (1 per cent solution).

Weekly blood vitamin C determinations were made on these patients for several weeks prior to institution of vitamin C therapy to attempt to arrive at a more accurate estimation of the constant value for the particular individual. Patients taking oral vitamin C were given medication one week

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\*\*H. A. Donaldson, Donaldson Laboratories, Springfield, rendered invaluable assistance in the performance of blood vitamin C determinations throughout this study.

\*Cebione used in this study has been supplied through the kindness of D. F. Robertson, M.D., Associate Medical Director, Merck & Co., Rahway, N. J.

prior to administration of the arsenical. During the administration of bismuth courses no vitamin C was given. At intervals between courses of arsenicals, blood levels for vitamin C were checked. While every effort was made to keep the original groups intact, circumstances beyond our control necessitated certain changes in the original group-

ings but this has enhanced rather than interfered with the data obtained.

By presenting briefly the essential features regarding medication and response in the limited number of individual cases, it is believed the reader will best be able to evaluate the merits of this therapy.

## REPORT OF CASES

Date	Rx*	Vit. C Dosage**	Blood Vit. C	Complaints
Case 1. N. R.				Severe headache, dizziness for 24 hours. Nauseated remainder of day.
10/20	N	0	.70	Same
10/27	N	0	.55	Same
11/ 3	N	0	.69	Same
11/14	N	50 mgm.	.44	Same
11/21	N	50 mgm.	.52	Slight headache, no nausea.
11/29	N	50 mgm.	.76	Slight headache, no nausea.
12/ 5	N	50 mgm.	.87	None
12/12	N	50 mgm.	.86	None
1/ 3	B	0	.79	
1/10	B	0	.70	
1/31	N	50 mgm.	.50	Slight headache, no nausea.
2/ 7	N	50 mgm.	.62	None
2/14	N	50 mgm.	.76	None
2/21	N	50 mgm.	.82	None
2/28	N	50 mgm.	1.02	None
3/ 6	N	0	.94	None
Case 2. L. B.				Nauseated remainder of day. Occasionally vomits.
10/17	N	0	.70	Same
10/24	B	0	.76	
10/31	B	0	.71	
11/ 7	B	0	.61	
12/ 8	B	50 mgm.	.67	
12/15	N	50 mgm.	.71	Nauseated.
12/22	N	50 mgm.	.80	Only slight improvement, if any, over last time.
12/29	N	50 mgm.	.81	Much better, slight nausea 1 hour after dinner. Much less reaction than last time.
1/ 5	N	50 mgm.	.88	None
1/12				Absent.
1/16	N	50 mgm.	.78	None
1/23	N	50 mgm.	.74	None
1/30	N	0	.80	None
2/13	B	0	.76	
2/27	B	0	.81	
3/12	B	0	.78	
3/26	B	0	.83	
4/16	N	50 mgm.	1.03	None
4/23	N	50 mgm.	1.04	None
4/30	N	50 mgm.	1.06	None
5/ 7	N	50 mgm.	1.24	None
Case 3. E. H.				Vomits for 2 to 3 hrs. after each Rx. Nauseated, headache 2 or 3 days.
10/11	B	0	.68	
10/18	B	0	.53	
10/25	B	0	.49	
11/ 3	B	0	.54	
11/10				Absent.
11/15	N	50 mgm.	.64	As before; in addition has been spitting up food after taking tablet. Says tablet upsets stomach. Some headache.
11/24	N	50 mgm.	.64	Continues to spit up. Upset stomach, occasional vomiting. Tablets cause "foam on her stomach" and spitting up.
12/ 1	N	1% Sol.	.62	Had lunch after Rx; not sick. No complaints after supper. First time since coming to clinic that was not sick from treatment.
12/ 8	N	1% Sol.	.84	None
12/15	N	1% Sol.	.79	None

Date	Rx*	Vit. C Dosage**	Blood Vit. C	Complaints
12/22				Absent.
12/29	N	0	.79	Terribly sick, vomited, cramps, unable to keep anything on stomach for 3 or 4 days.
1/ 5	N	1% Sol.	.73	None
1/12	N	1% Sol.	.80	None
1/26	B	0	.79	
2/ 9	B	0	.80	
2/23	B	0	.84	
3/15	B	0	.81	
4/ 5	N	1% Sol.	.88	None
4/12	N	1% Sol.	1.11	None
4/19	N	1% Sol.	1.10	None
4/26	N	1% Sol.	1.02	None
5/ 3	N	1% Sol.	1.07	None
5/ 9	N	1% Sol.	.95	None
5/17	N	1% Sol.	1.30	None
Case 4. J. S.				Vomiting, cramps, diarrhea for 24 hrs. after Rx. Severe nausea lasting all day.
10/20	N	0	.73	Same
10/27	N	0	.64	Same
11/ 3	N	0	.71	Same
11/17	B	0	.68	
12/ 1	B	0	.69	
12/15	B	0	.70	
1/12	B	0	.69	
1/19	N	1% Sol.	.74	Slight nausea, 2 hours.
1/26	N	1% Sol.	.78	None
2/ 2	N	1% Sol.	.76	None
2/ 9	N	1% Sol.	.85	None
2/16	N	1% Sol.	.85	None
2/23	N	1% Sol.	.86	None
3/ 1	N	1% Sol.	.88	None
3/ 8	N	1% Sol.	Lost	None
3/22	B	0	.89	
4/ 5	B	0	.90	
4/19	B	0	.86	
5/10	N	1% Sol.	.95	None
5/17	N	1% Sol.	.94	None
Case 5. N. S.				
12/22	N .3	0	.68	Nauseated all afternoon, vomited once.
12/29	N .45	0	.68	Nauseated, vomited several times during remainder of day.
1/ 5	N .6	0	.69	Nauseated, vomited 2 or 3 times on afternoon of Rx. Stomach badly upset for 2 or 3 days.
Refused further treatment because of reactions.				
2/ 9	N	1% Sol.	.68	None
2/16	N	1% Sol.	.70	None
2/23	N	1% Sol.	.75	None
3/ 1	N	1% Sol.	.80	None
3/ 8	N	1% Sol.	.84	None
3/29	B	0	.80	
4/19	B	0	.81	
Case 6. E. R.				Nausea for 2 or 3 hrs. after Rx. Frequently vomits.
10/11	B	0	.68	
10/18	B	0	.56	
10/25	N	0	.56	Nauseated, vomited once.
11/ 1	N	0	.56	Nauseated, no vomiting.
11/ 8	N	1% Sol.	.55	None.
11/15				Absent.
11/22	N	1% Sol.	.57	None
11/29	N	1% Sol.	.65	None
12/ 6	N	1% Sol.	.70	None
12/13	N	1% Sol.	.62	None
1/13	B	0	.70	
1/31	N	1% Sol.	.93	None
2/ 7	N	1% Sol.	1.04	None
2/14	N	1% Sol.	1.14	None
2/21	N	1% Sol.	1.24	None
2/28	N	1% Sol.	.98	None

Date	Rx*	Vit. C Dosage**	Blood Vit. C	Complaints
3/ 6	N	1% Sol.	.94	None
3/13	N	1% Sol.	1.05	None
3/20				Absent.
3/27	N	1% Sol.	1.02	None
Case 7. M. K.				Nausea, diarrhea 4 or 5 times until next day. Occasional vomiting.
2/28	N	1% Sol.	.88	Slight nausea for 1 hr.
3/ 6	N	1% Sol.	.89	Slight nausea for few minutes.
3/13	N	1% Sol.	.84	None
3/20	N	1% Sol.	.90	None
3/27	N	1% Sol.	.94	None
4/ 3	N	1% Sol.	1.01	None
4/17	B	0	.98	
5/ 8	B	0	1.02	
5/22	N	1% Sol.	1.21	None
Case 8. R. S.				Nauseated, vomits within 30 min. of Rx. Sick at stomach 2 days. Goes to bed for 24 hrs. after Rx. Reaction not so severe if Rx with mapharsan instead of neosarsphenamine.
11/14	M	0	.56	Same
11/21	M	0	.41	Same
11/28	B	0	.46	
1/ 2	B	100 mgm.	.52	
1/ 9	N	100 mgm.	.83	Did housework, cooked and "ate like a horse." Got along fine.
1/16	N	100 mgm.	.87	Slight headache for 1 hour.
1/26	N	100 mgm.	.86	Felt good entire week.
1/30	N	0	.83	None
2/ 6	N	0	.76	Nauseated, felt bad rest of day.
2/13	N	1% Sol.	.78	Same
2/20	N	1% Sol.	.84	None
2/27	N	1% Sol.	.88	None
3/12	B	0	.86	
3/26	B	0	.88	
4/16	N	1% Sol.	.87	Nauseated, vomited twice, in bed for 24 hrs. after Rx.
4/23	N	100 mgm.	.90	Nauseated, vomited once. Not as sick as last time.
4/30	N	1% Sol.	1.19	None
5/ 7	N	1% Sol.	1.11	None
Case 9. G. D.				Nausea, sick at stomach rest of day. Abdominal pains, cramps, tendency to diarrhea 1st day. Seldom vomits.
10/31	N	0	.61	Same
11/ 7	N	0	.63	Same
11/14	N	1% Sol.	.63	Slight looseness stools 1st day.
11/21	N	1% Sol.	.67	Same
12/ 5	B	0	.71	
12/19	B	0	.68	
1/ 2	B	0	.70	
1/16	N	1% Sol.	Lost	Nauseated, vomited once. Slight stomach ache, no diarrhea.
1/24	N	1% Sol.	.87	Got along fine. No complaints.
1/30	N	1% Sol.	1.04	None
2/ 9	N	1% Sol.	1.10	None
2/16	N	1% Sol.	1.11	None
2/23	N	1% Sol.	1.11	None
3/ 8	B	0	1.00	
3/29	B	0	1.00	
4/16	N	1% Sol.	1.03	None
4/23	N	1% Sol.	1.12	None
4/30	N	1% Sol.	1.27	None
5/ 7	N	1% Sol.	1.44	None
Case 10. R. E. C.				Nausea, vomiting several times after Rx. Severe cramps, diarrhea for 1 or 2 days. Felt so bad was necessary to go to bed for 1 or 2 days after each Rx, unable to work. Changed from neosarsphenamine to mapharsan which also caused nausea, feeling bad generally for 24 hrs. but able to carry on work. C. N. S. syphilis.
10/11	M	0	.48	Same
10/18	M	0	.54	Same

Date	Rx*	Vit. C Dosage**	Blood Vit. C	Complaints
10/25	M	0	.49	Same
11/ 1	M	50 mgm.	.43	Same
11/ 8	N	T-S***	.68	Slight nausea "but not like I usually have." Felt pretty good.
11/15				Absent.
11/22	N	T-S	.75	No complaints. Felt fine.
11/29	N	T-S	.78	No complaints. Felt fine.
12/ 6	N	T-S	.89	Slight cramps 1 hr. after Rx.
12/13	N	T-S	.70	None
12/20	N	T-S	.69	Slight cramps, 2 to 3 hrs.
12/27	N	50 mgm.	.53	Nausea, no vomiting.
1/ 3	N	T-S	.87	None
2/ 7	B	0	.72	
3/ 6	N	T-S	.67	None
3/13	N	T-S	.80	None
3/20	N	T-S	1.02	None
3/27	N	T-S	1.03	None
4/ 3	N	T-S	1.15	None
4/10	N	T-S	1.00	None
4/17	N	T-S	1.20	None
4/24	N	T-S	1.25	None

## Case 11. M. J.

				Nauseated, vomits 3 or 4 times after each Rx. Sick at stomach until next day.
10/17	M	0	.70	Same
10/24	M	0	.76	Same
10/31	M	0	.71	Same
11/ 7	M	0	.69	Same
11/14	N	1% Sol.	.66	Only slightly nauseated.
				Absent—hysterectomy.
1/ 9	B	0	.54	
1/30	B	0	.66	
2/ 6	B	50 mgm.	.71	
2/13	N	T-S	.79	Slightly nauseated, chilly.
2/20	N	T-S	.81	Got along fine. No complaints.
2/27	N	T-S	.91	None.
3/ 5				Absent.
3/12	N	T-S	.93	None.
3/19	N	T-S	1.16	None.
3/26	N	T-S	1.29	None.
4/ 2	N	T-S	1.28	None.
4/ 9	N	T-S	1.32	None.

## Case 12. H. B.

10/17	B	0	.68	
10/24	N	0	.58	Nausea, vomiting 2 or 3 days after Rx. Indigestion, cramps, diarrhea for 24 hrs.
10/31	N	0	.52	Same
11/ 7	N	0	.52	Same
11/14	N	50 mgm.-Sol	.51	Sick at stomach 1st day, vomited once, a little diarrhea 1st day. Much better.
11/21	N	T-S	.61	Slight diarrhea 1st day.
11/28				Absent.
12/ 5				Absent.
12/12	N	T-S	.51	Nausea, vomiting, cramps, chill. Finally wore off in 3 days.
12/19				Absent.
12/29	N	T-S	.75	None
1/26	B	0	.88	
2/23	N	T-S	.91	None
3/ 1	N	T-S	.91	None
3/ 8	N	T-S	.96	None
3/15				Absent.
3/22	N	T-S	1.08	None
3/29	N	T-S	1.13	None
4/ 5				Absent.
4/12	N	T-S	1.27	None
4/19	N	T-S	1.31	None
4/26	N	T-S	1.18	None

## Case 13. V. R.

				Nausea, epigastric distress, pain, indigestion for 4 or 5 days.
10/17	B	0	.56	
10/24	B	0	.58	

Date	Rx*	Vit. C Dosage**	Blood Vit. C	Complaints
10/31	B	0	.53	
11/ 7	B	0	.61	
11/14	N	50 mgm.-Sol.	.53	Much improved, a little nauseated which hardly seemed worth while mentioning.
11/21	N	T-S	.67	Slight nausea.
11/27	N	T-S	.84	None
12/ 5	N	T-S	1.00	None
12/12	N	T-S	.72	Slight nausea this week.
12/19	N	T-S	.82	Stomach slightly upset 1 hr.
1/ 9	B	0	.93	
1/30	B	50 mgm.	.94	
2/ 6	N	T-S	.99	None
2/13	N	T-S	1.08	None
2/20	N	T-S	1.27	None
2/28	N	T-S	1.15	None
3/ 5	N	T-S	1.24	None
3/12	N	T-S	1.12	None

## Case 14. H. S.

Nauseated immediately, vomits after Rx. and at home 2 or 3 days. Cramps, goes to bed 1 to 3 days.

9/29	N	0	.42	Same
10/13	B	0	.44	
10/27	B	0	.43	
11/ 3	B	0	.50	
11/24	B	100 mgm.	.54	
12/ 1	N	T-S	.56	Sick as usual, vomited 2 days.
12/ 8				Absent.
12/15	N	T-S	.71	Slight improvement, nausea 2 days.
12/22	N	T-S	.78	Much better, only slight nausea, 1 day.
12/29	N	100 mgm.	.90	Nausea, vomited 2 hrs. after Rx. Worse than any time since start of vitamin C therapy but not so bad as before taking vitamin C.
1/ 5	N	T-S	1.14	Better this time, slight nausea, vomited twice.
1/12	N	T-S	.91	Sick rest of day. Nausea only.
1/19	M	0	.92	No improvement over last Rx.
1/26				Absent.
2/ 2	N	T-S	.92	Vomited once.
2/ 9	N	T-S	.85	Very sick, nauseated, vomited all day.
3/ 1	B	0	.81	
4/12	B	0	.93	
5/ 3	N	T-S	.93	Slightly nauseated, vomited once.
5/10	N	T-S	1.15	Slightly nauseated.
5/17	M	T-S	1.36	No complaints of any kind. Felt better than at any time since coming to clinic.

## Case 15. P. S.

Nausea, vomiting for 2 days after Rx. No appetite, unable to eat or keep down water for 1st 24 hrs. after Rx. Cramps for 1 day.

10/13	N	0	.69	Same
10/20	N	0	.60	Same
10/27	B	0	.62	
11/ 3	B	0	.55	
12/22	B	50 mgm.	.66	
12/29	N	50 mgm.	.74	Not quite so much reaction.
1/ 5				Absent.
1/12	N	50 mgm.	.76	Nausea, cramps, a little worse than last time.
1/19	N	T-S	.79	Slight cramps only.
1/26	N	T-S	.83	None
2/ 2	N	T-S	.87	None
2/ 9	N	T-S	.87	None
3/ 1	B	0	.87	
3/22	B	0	.91	
4/ 3	N	T-S	1.10	None
4/12	N	T-S	1.06	None
4/26	N	T-S	1.02	None
5/ 3	N	1% Sol.	.93	None

\*N: Neoarsphenamine. B: Bismuth. M: Mapharsan.

\*\*Numbers represent mgm. constituting daily oral dosage. 1% Sol. represents 100 mgm. ascorbic acid in 10 cc. of neoarsphenamine solution and is given once weekly. T-S represents the administration of neoarsphenamine in 1 per cent solution together with a daily oral dose in the amount listed.

Analysis of the case reports brings out a number of interesting and significant facts. The use of some form of vitamin C therapy in conjunction with the administration of arsenicals in the treatment of syphilis resulted in the complete elimination of symptoms referable to arsenical sensitivity in all but one patient (14). Although three additional treatments have been given which are not listed and each has been totally devoid of reaction, there has not been sufficient time to determine that freedom from symptoms will be maintained in this patient. While it may be anticipated that the improved status will continue, the case will be considered as unsatisfactory until further observation proves otherwise.

In all patients except 7, the manifestation of symptoms of arsenical sensitivity is associated with blood vitamin C values which are definitely below normal. In this connection it may be stated that, at present, there is under study, a small number of additional cases which seem to exhibit evidence of arsenical sensitivity although the blood values for vitamin C appear to be within normal limits. This would suggest that, while hypovitaminosis C and arsenical sensitivity are associated most commonly, there may be a few cases in which other factors are involved. Subsequent study may be successful in eliciting these other factors.

The administration of vitamin C produces a most spectacular, and at times dramatic, relief from symptoms in these cases of arsenical sensitivity. It is believed that, in general, the most favorable results will be obtained upon the administration of the vitamin in solution to patients exhibiting mild or moderate degrees of sensitivity. In patients presenting only such symptoms as headache, slight nausea or occasional vomiting, the response may be satisfactory to the oral administration of the vitamin. Results from oral therapy will be achieved more slowly, however, than by the intravenous method, probably as the result of individual variations in such factors as absorption, utilization and elimination of the vitamin. While at times a satisfactory result may be obtained in the more severe cases by a single method of vitamin administration, it is believed that many cases will be seen which will respond most satisfactorily only to the combined oral and intravenous dosages.

It is interesting to note that in all cases, regardless of the dosage of vitamin C, there is a tendency toward gradual elevation of the blood values, some reaching high normal levels. This is not easy to explain in light of present knowledge of the functions and behavior of this vitamin. It has been pointed out that Dainow found that retained arsenic in the body would result in false positive urine determinations of vitamin C. This would not account for the gradual, progressive increase in blood values because nearsphenamine is not cumulative in the tissues, being eliminated with comparative rapidity. In taking blood vitamin C determinations one week after the last administration of the ar-

senical, ample time should have elapsed to eliminate this factor. It was also pointed out that in the control group there was no evidence to indicate that arsenical administration has any appreciable effect on the blood level of vitamin C. Most investigators have pointed out that the minimum daily dosage of vitamin C necessary to elevate and maintain blood vitamin C values is 100 mgm. Yet it is seen that the blood values in patients receiving only the 1 per cent solution (100 mgm.) once weekly show a progressive rise to limits considered as normal or high normal. With the improvement in appetite, the absence of nausea and vomiting and other distressing features which can definitely affect gastrointestinal action, a better gastrointestinal function obtains which may result in improved absorption and assimilation. While it cannot be stated positively that this entirely explains the problem, the possibility of an important relationship may exist.<sup>24</sup>

A question naturally arises in connection with any study such as this as to how much of the reaction claimed by patients is due to toxic effect of the arsenical and how much is due to psychic disturbance incident to the injection or the knowledge that some beneficial medicine is being administered. Undoubtedly the use of intravenous therapy will produce disturbing effects in certain individuals. All have seen patients become nauseated, vomit or faint during simple venapuncture. Early in the study two women complainers were subjected to the usual preliminary vitamin C determinations in preparation for therapy. It was found, however, that the blood values were in the high normal levels. In view of this and the fact that bismuth series were in progress at the time of the complaints, these patients were closely questioned. This revealed admissions on the part of each that the complaints might be nervous in origin because any use of a needle, regardless of the procedure, resulted in gastrointestinal upsets. To eliminate the effect upon the patient of a knowledge of the use of a helpful medication, many patients not included in the studies yet who complained of reactions were given nearsphenamine in the 1 per cent solution of vitamin C from time to time without knowledge on their part. Their reactions were indeed striking. It was not uncommon to have them volunteer the information that the last treatment had caused no complaints or had been a decided improvement over any treatment they had yet received. Several wanted "another treatment just exactly like the one last week because it didn't make me sick at all." A further attempt to eliminate the psychic feature consisted of withholding vitamin C from time to time without knowledge by the patient. This did not prove to be as definite a control as might be expected. It was observed that this method was effective only during the first few administrations, before the stage of complete absence of reaction was obtained. However, after the patient has become free from reaction it may

be possible to administer two or three subsequent treatments without the addition of vitamin C before symptoms recur. The return of symptoms, in most cases, is reflected by a lowering of the blood vitamin C values. It is also observed that if only an occasional treatment is given without the addition of vitamin C, little if any effect may be noted in the blood values and the steady and continued rise in blood values occurs.

There is no apparent definite blood vitamin C level at which symptoms disappear. It will be noted that, as the blood values approach normal, the patient becomes more and more symptom free. Symptoms can be made to disappear completely by the addition of small supplements of vitamin C as demonstrated both in patients in whom the blood vitamin C level is still below normal as well as in patients in whom the blood values are within normal limits. These facts prevent the explanation of arsenical sensitivity on the basis of hypovitaminosis C *per se*. Neoarsphenamine is known to deteriorate rapidly on exposure to light, air, heat or moisture with resultant increased toxicity. Administration of this drug that has been so exposed has produced toxic symptoms. It is known that ascorbic acid exerts an anti-oxidant effect upon neoarsphenamine *in vitro*. While no proof can be offered that this action continues *in vivo* after the administration of the ascorbic acid-neoarsphenamine mixture, such action could account for the observations just mentioned. It is, therefore, possible that the favorable action of the ascorbic acid, as brought out in this report, may be the result of a "stabilization" of the arsenical in the presence of an active reducing substance, vitamin C, as postulated by Dainow.

Of patients in whom normal blood vitamin C values have been obtained without satisfactory relief from symptoms, there may be two possible explanations which will need further study to substantiate. It is generally accepted, from the rather limited amount of work done so far, that normal values for blood vitamin C content lie within a range of from .75 to 2.0 mgm. per 100 cc. of blood. It is quite possible that our present concept on this may need modification because of the possible wide variation in vitamin C metabolism in different individuals. In support of this it will be noted that most cases begin to improve when blood levels are within a range of .75 to .85 mgm. per 100 cc. of blood; however, it frequently is observed that improvement will be noted in other individuals only after blood values have reached 1.0 mgm. per 100 cc. of blood or even higher. The other possible explanation may be that neoarsphenamine sensitivity, while being strongly influenced by vitamin C metabolism, also may be dependent upon an associated deficiency of some other vitamins or essential substances.

With the inclusion in therapy of any substance which results in so dramatic a relief from toxic symptoms, it would be important to determine

whether or not the improvement is accompanied by any reduction in effectiveness of the arsenical. In order to arrive at this evaluation, all early cases treated at the Clinic during the last year were studied with reference to the amount of treatment needed to accomplish a negative clinical and serologic status. By early cases is meant those presenting chancre, with or without secondary lesions, and those cases of secondary syphilis which, from the history and examination, could be determined as having followed the onset of the infection within a few weeks or months. Under the Cooperative Clinical Group Plan as used in the Clinic, the first course consists of eight neoarsphenamine and seven bismuth administrations in series at weekly intervals with the exception of the first three treatments which are given in the first ten days. In the first three treatments neoarsphenamine is accompanied by bismuth therapy. The second course of six injections of neoarsphenamine is followed by six injections of bismuth. The Clinic records reveal that sixty-nine early cases were admitted for treatment during the last year, during which time no vitamin C was used. At the end of the first course fifty-seven (82 per cent) had become serologically and clinically negative, four (6 per cent) were doubtful and eight (12 per cent) were still positive. At the end of the second course sixty-eight (98 per cent) were negative with one (2 per cent) still positive. To compare with this, another group of fifteen early cases was treated in the same manner except that the neoarsphenamine was given in a 1 per cent solution of vitamin C. Of these fifteen cases, at the end of the first course, thirteen (87 per cent) were negative serologically and clinically, one (6.5 per cent) was doubtful and one (6.5 per cent) was still positive. At the end of the second course or before it had been completed all patients gave negative tests. This confirms the clinical findings of Dainow, as already mentioned, and demonstrates conclusively that the addition of vitamin C to neoarsphenamine results in no deleterious effect upon its therapeutic value.

The potentialities of such therapy, to both patient and physician, can well be understood. There is no doubt as to the need of continued and more extensive investigation in this field which will probably be forthcoming in the near future. From the results of this study it is felt that vitamin C is a valuable adjunct to present methods of therapy in the treatment of syphilis.

#### CONCLUSIONS

1. A preliminary report on the study of the influence of vitamin C on arsenical sensitivity is given.
2. A review of the literature to date is presented.
3. Details of individual cases and controls are given to facilitate appreciation of the results obtained.
4. Approximately 50 per cent of patients receiving arsenicals complain of objectionable reactions.

This group is predominantly women. No explanation for this is offered at this time.

5. The type of antisymphilitic treatment administered does not appear to influence the blood vitamin C level.

6. Arsenical sensitivity is most commonly associated with hypovitaminosis C.

7. Reactions occur in the presence of normal blood vitamin C values in a small percentage of cases. These warrant investigation to rule out psychic and other factors.

8. Oral administration of the vitamin is effective but slower and subject to variations within the organism. Best results will be obtained in the majority of patients by intravenous methods. Severe cases may respond only to combined oral and intravenous therapy.

9. Spectacular relief from symptoms of arsenical sensitivity may be obtained by the use of relatively small doses of vitamin C given in conjunction with arsenical medication.

10. Progressive increase in blood vitamin C values are obtained through the administration of vitamin C in dosages heretofore thought to be too small to be effective.

11. Inclusion of vitamin C in arsenical therapy does not lessen the therapeutic response to the arsenical.

12. In general, as blood vitamin C values improve symptoms of arsenical sensitivity disappear. Recurrence of symptoms is usually reflected in a lowering of the blood values.

13. Vitamin C is a valuable adjunct to our present method of therapy in the treatment of syphilis.

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## CURARIZATION IN METRAZOL CONVULSIVE THERAPY

A METHOD WHICH MINIMIZES TRAUMATIC INJURY

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The general use of convulsant procedures in the treatment of the psychoses followed von Meduna's report<sup>1</sup> in 1935 of a series of cases of schizophrenia treated with pentamethylenetetrazol (metrazol). This report was highly encouraging but subsequent data indicated that the use of the drug as a sole agent is not an effective treatment of schizophrenia and is effective only in those cases with an affective component. Furthermore, the high incidence of relapses after metrazol convulsive therapy in schizophrenic patients made the ultimate result of treatment little better than those obtained with previous therapeutic measures. Insulin shock therapy is the treatment of choice in the true schizophrenic patient. This has been observed by Ross and Malzberg,<sup>2</sup> Menninger,<sup>3</sup> Bateman and Michael,<sup>4</sup> Robinson<sup>5</sup> and others. On the other hand, the convulsant procedures, of which metrazol is the most commonly used, are specific treatments for those affective psychoses which have a large depressive or agitative component. This includes the involutional and presenile types as well as the true agitative-depressive types which may occur at any age but usually after the third decade. This effectiveness has been noted by Bennett,<sup>6</sup> Young and Young,<sup>7</sup> Cottingham and Gavigan,<sup>8</sup> Robinson<sup>5</sup> and others. Although the results obtained from metrazol therapy in the affective psychoses are seldom questioned, the use of the drug was opposed by many because of the complications which arise from its use. The most serious of these are dislocations and fractures.<sup>9, 10, 11, 12</sup> Individual reports state

that these complications may occur in as high as 40 per cent of the patients treated, but most reports did not show as high an incidence.

Various means have been used to lessen the complications but, whether orthopedic appliances, hyperextension of the spine, preliminary insulin coma or spinal anesthesia have been used, the incidence of complications has remained high.

Many physicians continued to use metrazol even in the face of severe physical disorders<sup>13</sup> feeling that the possibility of complications did not contraindicate a procedure which produced such excellent clinical results.

Nevertheless, it appeared that a most valuable therapeutic agent might have to be given up unless some means of modifying the violence of the muscle contractures caused by the injection of metrazol could be devised, thereby limiting or avoiding entirely the complications resulting from its use.

After extensive experimentation and standardization on animals, Bennett<sup>14</sup> in 1940 introduced the use of unauthenticated curare\* (Indian arrow poison) as a preliminary injection to the metrazol itself. The effect of the curare in the dosages used is partial paralysis of the myoneural junctions of the striated muscles without apparent central effect. This decreases the degree of muscle spasm to the extent that the skeletal system remains unharmed and even the muscle soreness, which invariably accompanies the use of metrazol alone, has been eliminated largely or entirely. Without this soreness patients are less inclined to concentrate on the treatments and, therefore, have much less dread of the curare-metrazol treatments than of the metrazol treatments alone.

Curare in combination with metrazol has been used in 143 treatments to 32 patients in the Neurological Hospital with uniform results. The therapeutic effect of the metrazol has been unaltered but the muscle spasm has been so reduced that not a single complication or even a complaint of muscle soreness followed treatment. The following three cases are cited as examples of the types of cases treated and the results obtained from the treatment.

#### REPORT OF CASES

Case 1. Mrs. S. B., aged 68, widow, four children living and well, was admitted to the Neurological Hospital November 23, 1940, and was discharged January 11, 1941 (seven weeks in the hospital). Her chief complaints were depression, agitation, fear and self accusation.

*Present Illness.*—Five and a half months before admittance to the hospital, the patient's son noticed that she was having hallucinations. She would converse with members of the family when they were absent. Afterward patient's memory for recent events became progressively clouded although memory for past events remained good. Patient confused the real with the imaginary. Agitation developed gradually until at the time of hospital admission it was the most noticeable symptom. Her thought content was filled with the "unpardonable sin" motive, delusions and hallucinations.

*Past History.*—Patient was an excellent housekeeper and expert fur tailor. One similar illness thirty years previously followed the death of her husband. That illness was much less severe than the present one.

*Examination.*—The patient was an elderly agitated woman who paced the floor constantly stating: "No one can help me," "I'm all right," "Am I going to be killed?" Physical examination showed her essentially normal except for a stiffened left knee which had resulted from a long-standing arthritic condition.

*Laboratory.*—Urine was normal, red cell count 4,860,000, white cell count 8,250, Hb. 94 per cent, blood sugar 88.9 mg. per 100 cc., nonprotein nitrogen 31.26 mg. per 100 cc., glucose tolerance essentially normal, roentgenogram of skull and chest essentially normal.

*Treatment.*—Seven curare-metrazol treatments were given.

*Progress.*—There was a steady decrease of agitation, depression, delusions, hallucinations and confusion.

*Result.*—There was complete remission of all symptoms. Patient returned home and to work.

*Comment.*—Although this patient was 68 years of age and had an arthritic left knee, there were absolutely no complications following the treatment, not even muscle soreness.

Case 2. Mr. R. W. B., aged 66, married, two children living and well, was admitted to the hospital December 22, 1940, and discharged January 12, 1941 (three weeks in the hospital). His chief complaints were insomnia, overactivity, loss of judgment, religious mania.

*Present Illness.*—Illness began three months prior to hospital admission with development of idealistic although impractical promotion schemes (widow and orphan home). Patient wrote letters to the President of the United States and other dignitaries asking their assistance. His letter writing assumed prodigious proportions. He spent all of his money and even overdrew his bank account for gifts and charities. He attempted to convert everyone to his conception of the Christian life. Although he never became belligerent, he became such a problem that his family could not keep him at home.

*Past History.*—Patient was a minister of the Gospel and on several occasions had minor nervous breakdowns following revival meetings. In 1932 he was forced to retire from the ministry to a farm because of his emotional instability. He had one attack requiring five weeks hospitalization three years prior to his present illness.

*Examination.*—He was an elderly man who evidenced a hypomanic and euphoric state. He would preach for hours on the evils and sins of the world. He had no insight into his condition. Physical examination revealed a well developed elderly male with a slight hypertension (170/100). No other abnormalities were noted.

*Laboratory.*—Urine showed trace of albumin, sedimentation rate was 16 mm. per hour, red blood cells 5,000,000, white blood cells 9,800, Hb. 89 per cent, blood sugar 96.1 mg. per 100 cc., nonprotein nitrogen 42.84 mg. per 100 cc., glucose tolerance normal, roentgenogram of skull and chest essentially normal.

*Treatment.*—Five curare-metrazol treatments were given.

*Progress.*—Relaxation and sleep followed the first treatment. There was progressive decrease of admission symptoms after each treatment.

*Result.*—There was complete remission of illness without complications. Patient returned to his work.

*Comment.*—This is an example of the effectiveness of curare-metrazol in a case which had a large manic component. Although this patient was an elderly male in his seventh decade who had a moderate degree of hypertension, the treatments were given without any complications whatever, not even muscle soreness. The total length of hospitalization was three weeks costing \$150.00

\*Intocostrin (unauthenticated curare) was made available to us for clinical trial by Squibb & Company.

as compared with the cost of his previous illness which was \$240.000 and required five weeks hospitalization. At the time of his admission in 1937, he had the advantage of all supportive measures but no active convulsive treatment. The degree of recovery was excellent in each case.

Case 3. Mr. L. D. L., aged 62, married, no children, was admitted to the hospital December 11, 1940, and discharged January 8, 1941 (four weeks in the hospital). His chief complaints were nervousness, insomnia, inability to concentrate or to reach a decision, agitation and despondency.

*Present Illness.*—One month prior to admission to the hospital, patient had a small financial loss. This worried him greatly. He moved into an apartment and was kept awake by passing locomotives. This insomnia became more marked and a mild agitation developed. He rapidly reached the point where he could not remain seated for any length of time or even read a newspaper article and retain what he read. He became fearful and despondent and began thinking of suicide.

*Examination.*—The patient was quite agitated and fearful. He stated that: "My brain has dried up and I can't make decisions." "No one can help me." "I'll never see my wife again." Thought content was sketchy and contained the "unpardonable sin" motive. He was suspicious of food being poisoned. There were no abnormalities found on physical examination except evidence of mild dehydration.

*Laboratory.*—Urine was normal, red blood cells 6,130,000, white blood cells 8,000, Hb. 103 per cent, sedimentation rate 7 mm. per hour, blood sugar 99 mg. per 100 cc., nonprotein nitrogen 42.04 mg. per 100 cc., glucose tolerance test showed mild diabetic-like curve.<sup>15</sup>

*Treatment.*—Four curare-metrazol treatments were given.

*Progress.*—Patient improved after first treatment and improvement was quite rapid and marked in the following three weeks.

*Result.*—There was complete remission of illness without any complications, even muscle soreness.

*Comment.*—This is an excellent example of the dramatic results obtained from a few curare-metrazol treatments in an acute and early case of agitative-depressive psychosis.

#### SUMMARY

One hundred and forty-three metrazol treatments modified by a preliminary injection of unauthenticated curare have been given to 32 patients with a uniform excellency of result unmarred by any of the complications so frequently found in the use of metrazol alone.

#### CONCLUSIONS

Curarization before metrazol injection in no way lessens the therapeutic value of metrazol while it greatly minimizes or entirely eliminates the complications which frequently occur following metrazol convulsive therapy.

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## HYPERTHYROIDISM FROM THE INTERNIST'S VIEWPOINT

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#### DIAGNOSIS

The internist's interest in hyperthyroidism begins at the time the malady is first suspected. The major symptoms that guide one in the diagnosis of hyperthyroidism are those that affect the circulatory system (tachycardia, increased cardiac irritability or palpitation and high pulse pressure), the nervous system (increased irritability, tremor, active cerebration and overactivity which all may be classified under the heading of "nervousness") and those that bring about calorogenic changes (body warmth, sweating and weight loss in the presence of a good appetite).

That the diagnosis of hyperthyroidism can be troublesome is borne out by the suggestions in recent years of additional diagnostic aids such as estimation of the patient's ability to hold his breath,<sup>1</sup> the determinations of blood amylase,<sup>2</sup> hippuric acid secretion<sup>3</sup> and blood cholesterol.<sup>4</sup> A few days' trial on Lugol's solution under controlled conditions is a simple test of great value. None of these aids are conclusive in themselves any more than the basal metabolic rate is conclusive of thyroid activity, yet they are of supplementary value and may be employed to great advantage.

At the time the diagnosis of hyperthyroidism is being established, detailed study of the circulatory system is always indicated as also are estimation of kidney function, analysis of blood morphology

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and serology and the thorough investigation of specific systemic complaints. On the basis of these studies the internist makes his decision as to whether medical or surgical treatment is to be recommended.

#### TREATMENT

Treatment may be surgical or nonsurgical. Nonsurgical methods include the administration of compound solution of iodine (Lugol's solution), sedation, rest and suppression of thyroid activity through the medium of roentgen ray. This latter plan may be used alone or in combination with the other named agents. Nonsurgical treatment is prolonged, uncertain and frequently is followed by recurrences of the disease and has been advocated by the writers only when the general health of the patient precluded surgical interference or when the patient himself objected to surgery. In an effort to evaluate the correctness of the surgical treatment of hyperthyroidism the records of patients who were operated upon for goiter at Firmin Desloge Hospital during the first five years of its existence, from June 1933 to June 1938, have been reviewed.

#### ANALYSIS OF CASES

Of 139 patients operated upon for goiter during this period, 106 were considered to have hyperthyroidism. These were divided into two main groups: group 1, those patients having a uniformly enlarged goiter with evidence of overactivity (diffuse toxic goiter) and, group 2, those patients who showed a nodular goiter with evidence of hyperthyroidism (nodular toxic goiter). Of the remaining thirty-three patients operated upon, ten had

diffuse nontoxic goiter for which operation was performed to relieve pressure symptoms or for cosmetic purposes, nineteen had nodular nontoxic goiter, four suffered from malignant tumors of the thyroid and six had total ablations with the hope of relieving cardiac strain.

A resume of the important data on the 106 patients is included in table 1. The preponderance of female over male patients was most striking, the ratio being 4.6 to 1 in group 1 and 15.6 to 1 in group 2. Such fundamental differences in the two types of goiter as age of onset, amount of physical disability, duration of goiter and clinical course of the disease are shown in table 1.

Changes in the heart in the very beginning of the disease may consist merely of tachycardia. Hertzler<sup>5</sup> writes that at this stage the symptoms are not defined clearly and that this is considered a preclinical phase of the disease by the majority of practitioners. Cardiac changes in late toxic goiter may be limited to fibrillation or may progress to cardiac decompensation. In group 1 fibrillation was found in 8.6 per cent and in group 2 in 16 per cent.

The minimum number of preoperative hospital days for group 1 was two, the maximum eighty and the average twenty-one. In group 2 the minimum preoperative days again numbered two, the maximum ninety and the average twenty. The factors which influenced the preoperative stay were the establishment of the diagnosis, the preliminary care of the heart and circulatory system and the treatment of other physical anomalies considered hazardous to immediate surgery.

#### PREOPERATIVE DOSAGE OF IODINE

Observations on the preoperative dosage of iodine are given in table 2. The patients in group 1 who benefited most received between 6 and 15 drops a day. In group 2 evidence points to the preferred dosage of 15 drops or less of Lugol's solution daily. The postoperative decrease in basal metabolic rate was in inverse proportion to the preoperative decrease with Lugol's solution.

Table 1. *Résumé of Major Findings in 106 Patients With Toxic Goiter*

		Group 1	Group 2
Number		56	50
Sex distribution	Male	10	3
	Female	46	47
Average age		33.9	45
Average duration of goiter (Yrs.)		6.3	10.2
Known exciting causes	Puberty	3	
	Pregnancy	3	8
	Menopause	4	3
	Emotional upset	1	4
Cause unknown		45	35
	Nervousness	48	43
	Tremor	41	29
Major signs and symptoms	Palpitation	46	38
	Sweating	34	28
	Dyspnea upon exertion	35	27
	Minimum	0	0
Weight loss in pounds	Maximum	55	83
	Average	17.4	37
Auricular fibrillation		5	8
	Entrance	110	102
Average pulse	Preoperative	89	85
	Postoperative (immediate)	82	82
	Systolic	137	137
Average blood pressure at entrance	Diastolic	76	82
	Pulse pressure	61	55
Average B. M. R. preoperative		+41	+30

Table 2. *Effect of Varying Dosages of Lugol's Solution on the Basal Metabolic Rate*

	Amount of Lugol's Solution	Average Admis- sion	Basal Pre- oper- ative	Metabolic Preoper- ative Decrease	Rate (Per Cent) Post- oper- ative	Postoper- ative Decrease
Group 1—						
	Less than 6 drops (5 patients)	42	28.2	13.8	1.4	26.8
	(23 patients)					
	6 to 15 drops	48.8	21.4	27.4	5.5	15.9
	More than 15 drops (14 patients)	51.4	28.6	22.8	1.1	27.5
Group 2—						
	15 drops or less (14 patients)	39.9	25.7	14.2	10.7	15
	More than 15 drops (11 patients)	33	23.5	9.5	5	18.5

Table 3. Results From Thyroid Surgery

		Group 1	Group 2
Number		22	21
Improved		19	18
Not improved		3	3
Average pulse	Preoperative	110	95
	Postoperative	87	72
	Decrease	23	23
Average weight gain (pounds)		21	20
Average B. M. R.	Preoperative	+42	+33
	Postoperative	-9	-7
	Decrease	51	40
Complications	Recurrences	2	
	Myxedema	4	1
	Hypothyroidism	1	1

## POSTOPERATIVE CARE

It is well to inform the patient that removal of the goiter is only the first step in the therapeutic regime and that rest, freedom from mental strain, psychic support and control of activities following operation are vitally important if the best results are to be obtained. Just how long a patient should rest following the removal of a toxic goiter depends entirely upon the individual. Although patients who return to work within a week or two following the operation do much better than expected, they certainly do not do as well as the patient who resumes partial activity after a month and only resumes full activity after from three to six months following his operation.

## RESULTS FROM THYROID SURGERY

The major changes following thyroidectomy are reviewed in tables 3 and 4. In group 1 there were twenty-four patients who were observed for from eighteen months to six years after operation. Of these, two had total ablations, one for cardiac decompensation and one for suspected malignancy. Of the remaining twenty-two, nineteen were considered to have shown definite improvement and three showed no improvement. Two patients had recurrences, one of them having a second recurrence. Of the twenty-two, nervousness was improved in all but two. The patient's stability was



Fig. 1. Postoperative myxedema. A. Before and, B. after thyroid therapy. Maximum tolerant dosage, 1 grain U. S. P. thyroid daily. Patient requires continuous supervision for numerous complaints.

Table 4. Blood Pressure Changes in Patients Operated Upon

		Group 1		Group 2	
		Change	No. of Patients	Change	No. of Patients
Systolic	Average fall	15	10	8	6
	Average rise	16	7	24	8
	Unchanged		5		6
Diastolic	Average fall	12	2	11	6
	Average rise	14	14	14	10
	Unchanged		6		4

improved definitely in but three instances, questionably improved in five and unimproved in the remaining fourteen. The follow-up basal metabolic rate in fifteen patients of this group showed an average reduction of 51 per cent. Blood pressure recordings were obtainable in twenty-two patients and the changes are shown in table 4.

In group 2, of the twenty-three patients who were followed, there was one death from severe cardiac decompensation and there was one instance of postoperative psychosis. Of the remaining twenty-one patients, eighteen were improved and three were unimproved. The average duration of the goiter of those improved was twelve years. The average duration of the goiter of those unimproved was eighteen years.

Nervousness was improved in eighteen of the twenty-one. Stability was improved in nine, questionably improved in two and unimproved in ten. All patients gained weight but two and their average loss was 10 pounds. The average postoperative basal decrease was 40 per cent. Table 4 shows the changes in blood pressure.

## POSTOPERATIVE IODINE

Iodine was administered alternately to patients who returned to the clinic following operation to note its effect on the patient's progress.

Of the nineteen patients in group 1 who were improved by thyroidectomy, but nine received Lugol's solution postoperatively. Neither of the two patients who had recurrences received iodine. No material difference was observed in the blood



Fig. 2. Persistent exophthalmus and emotional instability three years after thyroidectomy. Patient has many symptoms simulating those of hyperthyroidism and requires continuous medical supervision.

pressure, pulse or general progress between those who received iodine and those who did not.

In group 2, of the eighteen patients improved, nine were given Lugol's solution postoperatively. Of the three patients unimproved in this group, one received iodine and two did not. Again there was no material change noted in the blood pressure or pulse rate in those who took Lugol's solution and in those who did not.

#### COMMENTS

Seventeen surgeons operated upon the 106 patients in this series without detectable difference in the results. While the postoperative treatment carried out by the individual surgeons varied somewhat in detail, it was uniform in principle.

It is our opinion that the results shown from thyroidectomy in this series justify a continuation of the surgical treatment of hyperthyroidism. It is recognized that the stability of the patient may never be established fully and that throughout life he may need medical support. This is particularly true of those patients having a diffuse toxic goiter. For this reason it would seem better to refer to the management of hyperthyroidism rather than to the cure of the disease.

#### SUMMARY

The diagnosis of hyperthyroidism offers no serious problem. An occasional case may require prolonged observation and study.

Established points of difference between nodular toxic goiter and diffuse toxic goiter were confirmed in this statistical review.

Surgical removal of the toxic goiter is considered the procedure of choice although it is far from the ideal therapy.

The dosage of Lugol's solution found to be most beneficial in preparing the patient for operation was about fifteen drops a day in both groups. There was no proof that iodine administered postoperatively influenced the patient's ultimate course.

Postoperative studies on the basal metabolic rate and blood pressure indicate the great importance of continued postoperative care.

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Although there is no dependable routine x-ray method for determining the sex of the unborn child, under certain peculiar circumstances it is sometimes possible after about the seventh month of pregnancy, *Hygeia*, *The Health Magazine* states in answer to an inquiry.

## CHRONIC CLINICAL ALLERGY

### CALCIUM AND POTASSIUM THERAPY

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Two of the most prominent basic manifestations of clinical allergy are the apparent disturbance in local water balance and the apparent autonomic nervous system imbalance in favor of the parasympathetic system. That these alterations of normal physiology are closely related is almost certain but the relationship is not entirely clear. For this reason it is probably justifiable to consider the two manifestations separately.

Physical signs point to edema as the chief manifestation of many allergic disorders. The nasal mucosa of the patient suffering from hay fever is frankly edematous and the thin watery nasal discharge may be interpreted as a manifestation of severe disturbance in the local water balance. Bronchoscopic examination of the patient with asthma reveals changes in the bronchial mucosa similar to those seen in the allergic nasal mucous membrane. The bronchial mucosa is swollen and pale; the depth of red color sometimes seen is probably directly proportional to the amount of secondary infection or irritation which may be present. In simple asthma there is abundant colorless sputum. In urticaria and angioneurotic edema the localized edema is even more readily appreciated. Contact dermatitis typically presents the appearance of a vesicular dermatitis with exudation of watery material.

Vagotonia, or exaggerated influence of the parasympathetic system, is manifest in many allergic disorders. The most typical example is the spasm of bronchial musculature in asthma. The familiar effect of adrenalin in relieving the acute phases of asthma and other allergic diseases is a dramatic point in favor of the theory of an existing hyperfunction of the parasympathetic system since one of the most pronounced effects of adrenalin is stimulation of the sympathetic nervous system, exerting an effect opposite to that of parasympathetic stimulation.

It is true that a variety of changes not so closely related to water imbalance or vagotonia may occur in all types of clinical allergy. Redness of the bronchial mucosa and purulent sputum in asthma, scaliness and dryness of the skin in allergic eczema and many other manifestations frequently are encountered. These changes, however, might well be secondary, being superimposed on and masking the appearance of primary water imbalance or vagotonia.

The ultimate treatment of clinical allergy might then depend on an alteration of these two primary factors by a decrease in parasympathetic activity and by a normal regulation of impaired water balance. Although these two factors may not appear

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to be closely related, regulation of the one might very well regulate the other.

Alteration of the size of the intracellular colloidal aggregates may disturb the balance between intracellular and extracellular fluid. Diffusible ions are present on the surface of these colloidal masses, held there by electrical attraction. The number of diffusible ions present on the surface of a colloidal mass is directly proportional to the size or surface area of the mass. Clumping, or fusion of two or more colloidal aggregates, will decrease the total surface area of the two, presenting less surface area for the adsorption of diffusible ions. If the colloidal aggregates become dispersed there will be an enormous increase in the total surface area allowing for the adsorption of greater amounts of diffusible ions.

The exact reason for clumping or dispersion of colloidal aggregates is unknown but it is probably influenced to some extent by the kind of diffusible ions present on the surface. By their electrical charge these ions either may attract or repel each other, thus effecting dispersion or union of themselves and the masses to which they are attached. An increase in the number of certain ions present within the cell membrane attracts an increased amount of water into the cell by raising the osmotic pressure over that of the extracellular fluid. Conversely, a relative increase of certain electrolytes in the extracellular fluid will result in an extracellular localized edema.

Obviously such intracellular changes, if they do exist, involving particles and substances of ultra-microscopic size, can not be studied directly. The exact mechanism that is operating and, what is more important, the order in which these changes occur remain unknown. However, the theory is attractive and it has led to attempts to effect a regulation of such a supposed disordered cellular physiology.

Since part of the cycle of changes involves an alteration in the concentration of the electrolytes, certain investigators have administered various salts in an attempt to supply an excess of diffusible ions. Calcium and potassium salts have been used widely and in the reports their effectiveness has varied from complete relief to complete failure.

Calcium and potassium also are thought to be closely related to the physiology of the autonomic nervous system. Whether they are effective through direct action on the nerve endings or whether they are more intimately associated with intracellular changes is uncertain. In 1924 Pottenger<sup>1</sup> wrote that the result of stimulation of the nerves of any system must depend largely on the condition of the cells upon which the nerves act and that an increased parasympathetic action presupposes an actual increase in intracellular potassium or an actual decrease in intracellular calcium. He reported the complete relief of asthma following the intravenous administration of calcium. In the same year Douthwaite<sup>2</sup> wrote that calcium ions depress vagus conduction and that a reduction in their concentration predisposes the occurrence of

asthma. He advised the administration of large amounts of calcium in the treatment of asthma.

In 1929 Cohen and Rudolph<sup>3</sup> studied ten cases of allergy comprising asthma, urticaria and vasomotor rhinitis. They postulated that potassium ions exert an effect similar to that of parasympathetic stimulation and that calcium ions exert an effect similar to that observed following sympathetic stimulation. They supplied their ten cases with massive doses of calcium for a period of one month but were unable to detect any amelioration of the clinical symptoms during this period.

In 1930 Tainter and Van Deventer<sup>4</sup> studied the action of calcium in experimental irritative edemas and found it to be inert and useless in these conditions. They concluded that the alleged specific antiedemic action of calcium and its theoretical antipermeability effect on tissues or organs lack satisfactory experimental evidence.

From 1924 to 1933 the treatment of various forms of allergy by the administration of calcium was studied by Thomas,<sup>5</sup> Hallam,<sup>6</sup> Ramirez,<sup>7</sup> Crippe<sup>8</sup> and Maxwell and Zacharin.<sup>9</sup> The first three investigators, on the basis of their observations, pronounced calcium therapy worthless. Crippe, and Maxwell and Zacharin found that a certain proportion of their cases were improved by calcium therapy.

In 1935 Camp and Higgins<sup>10</sup> studied the effect of potassium in the experimental animal and found that, if given in sufficiently high concentration, it produced all the changes attributable to adrenalin. They concluded that potassium is responsible for the typical changes ascribed to epinephrine and that one of the functions of the adrenals is to maintain a constant distribution of potassium.

In 1940 Talbott and Schwab,<sup>11</sup> reviewing the biochemistry and therapeutics of potassium salts, agree with Camp and Higgins that one function of epinephrine may be to maintain an optimum potassium level in the body and that changes in potassium are responsible for the typical changes ascribed to epinephrine.

In 1938 Rusk and Kenamore<sup>12</sup> treated six cases of urticaria successfully with potassium salts. Cohen<sup>13</sup> was unable to relieve his cases of chronic asthma with potassium chloride administered in large doses. Rusk, Weichelsbaum and Somogyi<sup>14</sup> found that during the clinical manifestations of allergy there is an increase in serum potassium which they believe occurs at the expense of intracellular potassium. They believe that the action of adrenalin in lowering blood potassium is accomplished by driving the potassium back into the cells.

Bloom and Grauman<sup>15</sup> found potassium therapy a definite help in the treatment of a wide variety of allergic diseases, with the exception of chronic asthma in which its use was disappointing. Abt<sup>16</sup> was able to benefit his cases of allergic rhinitis and sinusitis by the administration of potassium chloride. Spain, Westcott and Gaillard<sup>17</sup> found potassium chloride valueless in the treatment of hay fever and allergic coryza. Rubin, Aaronson, Kaplan and Feinberg<sup>18</sup> concluded that potassium salts

were of no value in the treatment of seasonal asthma and hay fever and that the effect of such salts in other allergic conditions is highly questionable.

#### PROCEDURE

In this study twenty-nine patients were given either potassium or calcium salts by mouth. Prior to the institution of this therapy all the patients had been studied extensively in an attempt to discover any organic disorder or any specific extrinsic allergenic substance which might be responsible for their clinical allergy. The group comprised one case of urticaria, one of angioneurotic edema, one of allergic coryza and twenty-six cases of asthma.

Twenty-four of the patients had been classified as cases of intrinsic allergy. The other five were cases of extrinsic allergy in which the offending substance had been shown to be house dust or

some other inhalant substance present in the patient's home or place of occupation. In these five cases it had been impossible to eliminate the offending substance from the patient's environment and specific desensitization had afforded incomplete relief.

Thirteen patients were given potassium chloride in the form of a 25 per cent aqueous solution well diluted in water. Four of these patients followed a high potassium, low sodium and low calcium diet. This diet contained a total twenty-four hour intake of 6.3 grams of potassium and 0.5 grams of calcium.

Sixteen patients were given calcium gluconate in the form of powder or tablets. One haliver oil capsule, containing 170 units of vitamin D, was administered with each dose of calcium in the hope that this might assist in the absorption and utilization of the calcium. Nine of these patients followed a high calcium, low sodium and low potas-

Table 1. Potassium Therapy

Case	Disease	Calcium	Chloride	Phospho- rous	PR Interval	Daily Dose	Weeks	Diet	Results
1.	Asthma	11	618	3.64	0.16	0.25 gm. 0.5 gm.	1 2	Yes	Improved
2.	Asthma	10.2	616	2.81	0.16	6 gm. 0.5 gm.	1 2	Yes	
3.	Asthma	10.6			0.16	3 gm.	1		
4.	Urticaria	9.3	616	3.64	0.15	6 gm.	3	Yes	Unimproved
5.	Asthma	10.4				3 gm.	1	Yes	Unimproved
6.	Asthma		581		0.15	0.5 gm.	4	No	Unimproved
7.	Angioneurotic edema					6 gm.	3	No	Unimproved
8.	Asthma	11.3	581	3.64		12 gm.	2	No	Unimproved
9.	Asthma	9.1			0.15	6 gm. 0.25 gm.	1 3	No	Unimproved
10.	Asthma	11	475	3.7		3 gm. 6 gm.	2 2	No	Unimproved
11.	Asthma	10.4	498	3.6		12 gm. 6 gm.	2 3	No	Unimproved
12.	Asthma	10.9	489		0.16	6 gm.	4	No	Unimproved
13.	Asthma	9.5	582		0.16	12 gm.	4	No	Unimproved

Table 2. Calcium Therapy

Case	Disease	Calcium	Chloride	Phospho- rous	PR Interval	Daily Dose	Weeks	Diet	Results
14.	Asthma	9.5	601	3.08	0.16	2 gm.	2	Yes	Unimproved
15.	Asthma	10.8			0.14	2 gm.	3	Yes	Unimproved
16.	Asthma	11.9	616	3.08	0.18	24 gm. 1.5 gm.	4 3	Yes	
17.	Asthma	10.6		4.57	0.14	2 gm.	3	Yes	
18.	Asthma	11.5	622		0.12				Unimproved
19.	Asthma				0.16	12 gm.	2	Yes	Unimproved
20.	Coryza	10.1	586		0.14	24 gm. 1 gm.	3 1	Yes	Improved
21.	Asthma	10.6			0.16	2 gm.	2	Yes	Unimproved
22.	Asthma	10.1	616		0.18	24 gm. 2 gm.	2 1	Yes	Unimproved
23.	Asthma					12 gm.	2	No	Unimproved
24.	Asthma	10.7	581		0.17	24 gm. 2 gm.	2 1	No	Unimproved
25.	Asthma	9.7			0.16	12 gm.	1		Unimproved
26.	Asthma	10	500	3.8	0.12	2 gm. 12 gm.	3 2	No	Unimproved
27.	Asthma	11.2	488	3.5		24 gm.	2	No	Improved
28.	Asthma	10	500			24 gm.	3	No	Unimproved
29.	Asthma	8.7	588			24 gm.	3	No	Unimproved

sium diet. This diet contained a total twenty-four hour intake of 1.4 grams of calcium and 2.6 grams of potassium.

In most of the cases the level of blood calcium, chlorides and phosphorus was determined and the PR interval of the electrocardiogram was measured prior to the institution of this therapy. In a few cases these studies were repeated at the end of the experimental period.

#### RESULTS

In the treatment of chronic clinical allergy the evaluation of results is not simple. Some of these patients undergo spontaneous remissions from time to time for reasons that are not entirely clear at the present time. Also, subjective information derived from the patient contributes in part to the final evaluation. Most of the patients used in this study had been under treatment and observation for many months prior to the institution of this therapy. The degree to which each was affected and the occurrence in the past of relief following other therapeutic measures were taken into consideration.

One patient reported symptomatic relief following the administration of potassium. Three patients reported similar relief following calcium therapy. Of these four patients, numbers 1, 19 and 26 had experienced relief in the past during periods when they had been receiving no medication. Patient number 20 had allergic coryza due to environmental dust. Her degree of improvement was by no means complete.

The daily dose, duration of treatment, blood electrolytes and electrocardiographic PR interval are shown in tables 1 and 2. Those patients who reported improvement received no larger dosage than many who reported no improvement. The group showed no striking deviation from the normal range of blood calcium, chlorides and phosphorus.

The results discourage the therapeutic use of potassium and calcium salts in chronic clinical allergy but they do not invalidate the theory of the allergic mechanism as presented.

#### CONCLUSIONS

A small group of patients with chronic clinical allergy was treated by the administration of calcium and potassium salts. The group as a whole experienced no marked degree of relief.

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### A COMMON OPERATIVE FINDING IN APPENDICITIS

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At the present time the medical profession is agreed that a major cause of death following appendectomies is postoperative ileus, either paralytic or mechanical in origin. Although the majority of cases operated on for appendicitis survive, there are not a few who do so after a most stormy postoperative course and who owe their survival entirely to the most strenuous efforts of the surgeon in the treatment of the ileus which developed postoperatively.

I wish to remark on an interesting condition which I have noted many times during the last several years in operations for appendicitis. I have noticed in many cases of both chronic and acute appendicitis a peculiar state of the terminal four to twelve inches of the ileum. I found that the terminal ileum, instead of being easily traceable backward from the ileocecal valve to the adjoining ileum and freely movable as is the normal finding, is fastened down tightly by a short mesentery to the posterolateral wall of the abdominal cavity. On closer examination there is a distinct thickening, or scar formation, on the lateral leaf of the mesentery of the involved ileum. The contraction of this scar tissue on the lateral wall of the mesentery causes a torsion and lateral rotation of the ileum supplied by this mesentery. Is it not quite likely that the constant tug and pull exerted on the terminal ileum by this scar tissue contraction could eventually result in a partial intestinal obstruction or even in some cases a complete obstruction?

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Then, is it not probable that such a condition if not corrected at operation should be a major contributing factor in producing postoperative ileus?

The appendix is found most commonly to lie against or in close proximity to the lateral leaf of the mesentery of the terminal ileum. It is quite logical to assume then that this thickening and resulting abnormal pull on the ileum might in all likelihood be the result of chronic appendiceal inflammation. A colleague\* has suggested that the pathological condition mentioned possibly is caused by an inflammation of the lymphatic vessels draining from the appendiceal region resulting later in perilymphatic scar tissue formation.

I have found this condition to exist in patients whom I have reoperated on for ileus several days after removal of the appendix. Furthermore, I have found the same condition at autopsies of appendectomy cases in whom I had thought the cause of death was paralytic ileus.

Freeing the fixed terminal ileum by cutting the fibrous lateral leaf of the mesentery has resulted in relief of the obstruction. In these cases of shortened mesentery the involved ileum is grasped between the thumb and four fingers of the left hand, pulling it upward to make tension on the mesentery, then an incision is made dividing the thickened scar tissue on the lateral surface of the mesentery in a direction parallel to the long axis of the involved gut. This can be done with a minimum of bleeding. By using reasonable care the ileum then can be pulled upward to its normal relationship to the ileocecal valve and the adjacent ileum without damaging the blood supply to the involved ileum. After this procedure the terminal ileum is freely movable and has a mesenteric attachment of normal length.

During the last year I have adopted this procedure of correction in all cases of appendicitis in which shortening of the mesentery of the terminal ileum was found. I have been gratified by the smooth and uneventful postoperative courses which these patients have experienced. Especially noticeable has been the absence of nausea, vomiting, abdominal distention and other symptoms which call for heroic postoperative treatment.

The incidence of shortened mesentery to the terminal ileum due to scar tissue formation in my experience this last year has been roughly 30 per cent. A more careful survey of my records will probably show a higher incidence.

It is not my intention to claim any credit for describing this condition. I have no doubt it has been noticed by surgeons many times. However, I wish to stress two important points: first, that the condition is very common; second, that the trouble is definitely amenable to simple surgical measures.

I am quite confident that if this pathological condition, when discovered at appendix operations, is

corrected, the postoperative course not only will be a much smoother one but that ultimately the mortality of appendicitis may be influenced favorably.

Jackson, Jabez N.: Membranous Pericolicitis and Allied Conditions of the Ileocecal Region, *Ann. Surg.* 57.

## MEDICAL SHOCK IN PEDIATRICS

CALDWELL B. SUMMERS, M.D.

KANSAS CITY, MO.

During seventeen years of pediatric practice I have been impressed with the too frequent unnecessary trauma in the diagnosis and treatment of pediatric patients. During the last decade and a half more and more special procedures have become available and hundreds of new technics in diagnosis have been discovered. Blood counts and blood chemistry seem to be absolutely necessary routines today and the young physician seems at a loss without the present hospital and laboratory facilities. It is to the application of these unnecessary tests, examinations and traumatic therapeutics that I refer when I speak of medical shock.

During my years of practice there has been amazing progress in all fields of medical practice and this is particularly true of infant care and handling of the sick infant. Hundreds of new forms of treatment and new medical procedures are now available. Human (physiological) chemistry has made marvelous advances. All these procedures produce more or less trauma. Dozens of special tests and examinations which were used in the past and thought at the time advantageous are now in the discard and many new as well as old ones are being used today with gratifying results. Survival value is the important factor in diagnostic and therapeutic procedures. Trial and error determine merits. Do not be the first to try a new remedy or the last one to accept it, is an applicable adage.

Most charity pediatric patients are hospitalized. This is due to several reasons, viz., first, it is the practical thing because most of the homes are unsanitary and the environment not conducive to the best welfare of the patient; second, the parents frequently are superstitious and will not appreciate the advice given or the treatment recommended nor will they carry out orders and, third, it is rather difficult for a physician to take the interest or time necessary to care for a child in such a home when he is aware of this situation. Again, most of the charity patients are advanced cases, desperately ill, or patients who have been treated wrongly with drugstore prescribing or home remedies. Furthermore, children of poor families as a rule are malnourished and their resistance (not immunity) is low. Physicians doing charity work prefer having their patients centrally located and strictly supervised by competent interns and nurses.

In private practice the reverse is true with regard to hospitalization. The trend for the last

\*Personal communication from Dr. M. Pinson Neal, Columbia, Professor of Pathology, University of Missouri.

twenty-five years has been toward hospitalization and most adults prefer the hospital. But children and babies emphatically do not prefer the hospital. This has given me my present ideas on medical shock.

Much has been written on surgical shock and I think everyone agrees that shocks to the human mechanism are factors of prime importance because it is known that thousands of deaths yearly are due to this cause. The same is true, I believe, with regard to medical shock in pediatric practice. Hospitalization is a marvelous thing for the mass of people. It gives them a sense of security if they are desperately ill. Hospital care indeed is required in many cases; but in the majority it is not. It is surprising the percentage of parents who say "Take John to the hospital, it is all paid for by insurance." They do not know that the child would be a hundred times better off at home in his own bed with his accustomed environment and a watchful mother in attendance. Because the hospital is paid for by insurance, they must derive some benefit. They are not aware that a hospital is full of contagion and a slip in technic may cause a secondary infection.

A hospital is one of the finest institutions and encouragement of its use must be maintained. However, all too often infants and children are taken to a hospital on the slightest provocation, the physician ignoring the medical shock which plays a major part in the patient's chance of not doing well or of not having a speedy recovery. The emotional factor plays an important part in the progress of a disease.

The manner in which infants and children are treated or handled and the number of procedures instituted have a great bearing on the rapidity with which the patient recovers. A child who is hospitalized is subjected to many tests and much handling which frequently are not necessary and all too often are disturbing to the patient's welfare. One of these factors is disturbed sleep due to such things as routine temperature readings, bathings, feedings, blood counts, medications, repeated urine tests and roentgen ray pictures, many of which are done at the convenience of the technician, physician or nurse without regard to whether or not the infant is asleep.

A hospital is the proper place for any pediatric patient if special treatments or tests are necessary such as spinal punctures, operative procedures or metabolism or functional tests. But how many sick infants really need this special work? Too often the child is sent to the hospital merely for the convenience of the physician or parents, all too often to the detriment of the child.

Medical shock is a factor in the home the same as in the hospital but not to so great an extent. A child should be made as happy and contented as possible with as little disturbing, manipulating or forced medication as is possible. A child seldom should

be aroused from sleep for medication or temperature reading. Restful sleep is marvelous medicine. In other words, hospital routine does not take into consideration the feelings of the child or whether he is frightened or not. If the patient is dehydrated and needs fluids, they are immediately given by hypodermoclysis without trying to give them in a more pleasant manner. This to a certain extent is what I mean by medical shock.

If the patient is delirious or comatose, that is a different matter. If a child is desperately ill, all necessary procedures must be carried out. My criticism concerns the child or infant moderately ill who will progress more satisfactorily at home with less medical shock and also the desperately ill patient in the hospital who is disturbed unnecessarily with tests.

For example, a child at home and well suddenly becomes ill. He has been pampered, spoiled and humored. He has been accustomed to a certain diet as skim milk and cookies; in the hospital he is put on a restricted diet of buttermilk without consideration as to his accustomed diet. Would not a person sick in a hospital prefer his accustomed diet if it be a sensible one rather than a routine hospital diet and would he not have a better appetite? Not only the accustomed diet is necessary but many mothers have a special technic in the feeding of their children which is important when the child is ill.

Never change the daily routine when the child is sick. Make the child or infant as happy and contented as is possible with a minimum of medical shock in doing what is necessary for a rapid recovery.

222 Plaza Theatre Building.

#### SELECTION OF BLOOD BANK DONORS

Only those persons who have been born in this country and who have never lived in districts where malaria is prevalent should be used as donors for blood banks, Ernest F. Gordon, M.D., Yonkers, N. Y., advises in *The Journal of the American Medical Association* for March 22. He says that such a policy will minimize the possibility of spreading the disease from man to man. The first recorded case of an accidental transmission of malaria through transfused stored blood is reported by him.

#### LONDON BOMBINGS DEVELOP NEW USE FOR STETHOSCOPE

A new use for the stethoscope is reported by the regular London, England, correspondent of *The Journal of the American Medical Association* in the March 15 issue. He says:

"In gratitude for his work in removing delayed action bombs which fell in the east end of London, Capt. Robert Davies, who is in command of the bomb disposal squad, has been presented with a stethoscope by the resident staff of one of the hospitals. He has frequently borrowed a stethoscope from the hospital in order to listen to the ticking of delayed action bombs before removing them."

## SPECIAL ARTICLE

THE RELATIONSHIP OF THE WOMEN'S  
FIELD ARMY TO THE STATE AND  
NATIONAL HEALTH DEPARTMENTS

LOUIS H. JORSTAD, M.D.

ST. LOUIS

In protecting the health of the people of this country the field of activities of the United States Public Health Service is broad and diversified. Since its creation in 1798 the concepts and salients of public health activity have changed considerably from time to time. The United States Public Health Service has cooperated with state and local departments of health and unofficial health organizations in the promotion of health. The Women's Field Army of the American Society for the Control of Cancer is one of these unofficial health organizations. Conceptions regarding the responsibilities of the government toward society have broadened. As unsanitary conditions, epidemics and ill health are no longer considered of purely local concern, there is an expanded conception and a broader interpretation of federal health powers. During the last fifty years there has been a marked decrease in the mortality from the three communicable diseases, tuberculosis, typhoid fever and diphtheria. During the same interim there has been an increase in mortality from heart disease and cancer. The Public Health Service is directing its attention to these two diseases of the older age group. In an act passed by Congress in 1937, an expansion of these health activities is apparent. In this Act was embodied an appropriation of \$750,000 for construction of the National Cancer Institute and additional monies for conducting studies in accordance with the provisions of the Act. This Institute has been built and its research program is in progress. Monies are provided for the continuance and expansion of this work. Through this Act federal monies are available for research activities by individuals and groups in communities throughout the country. Young medical men designated as "trainees" are sent to the various medical centers for one, two and three years of special training in the diagnosis and treatment of cancer.

The history of the United States Public Health Service divides itself into four eras. The first was the era of sanitation; the second was the era of dissemination of popular information regarding the prevention of disease; the era beginning in 1912, in common with action of the American Medical Association, marked the development of the public health concept that all potential benefits of preventive medicine should be made available to every individual. At present, in the fourth era of

public health, emphasis is being shifted to such conditions as crippling chronic diseases and cancer.

In all of these eras the cooperation of the medical profession with the Public Health Service in township, county, state, region and nation has been of immeasurable value. The cooperation of the lay population, their faith in the medical profession, their support of local health campaigns and local hospital projects, have made much of this success possible.

Our federal form of government, with divided authority and jurisdiction, is different from the highly centralized governments of most European countries. Also, our health services are not centralized and it is well known that our health record is second to none. The majority of American people still believe in the principle of "free choice of physician." They still have pride in their local communities and through their local taxes and community chests build and maintain hospitals for the care of the indigent. This is becoming burdensome in some communities and as a result state and national subsidence has become necessary. Decrease in philanthropy and decrease in income from existing philanthropies add to the acuteness of this problem.

I am of the group, however, that is not in favor of the building and maintenance of numerous government hospitals. Financial aid to communities will make it possible to modernize and enlarge general hospital facilities adequately. The Ellis Fischel State Cancer Hospital at Columbia, Missouri, cannot take care of the indigent cancer patients in the state. It would be most impractical for the legislature to provide funds to build and maintain a hospital adequate for such purpose. Many other hospitals are as adequately equipped to diagnose and treat cancer. There are also funds, governmental and private, to take care of the indigent cancer patient in these hospitals. The value of the State Cancer Hospital rests not alone on the actual cancers cured but chiefly on the advancement of knowledge that should emanate from such a closely knit and specialized organization. This statement does not minimize the value of the saving of a life from cancer but is aimed at forming a clear picture of cancer control.

I feel assured that, as I have attempted to describe these local, state and national health activities, you have fitted into them the Women's Field Army. The State Cancer Hospital has not changed the job of the Women's Field Army. If in five years or ten years there is a definite increase in the number of cases of early cancer admitted to the hospital, it can be said that that is a definite measure of the effectiveness of the program of the Women's Field Army. The public is not told to go to a specific place for the diagnosis or treatment of a particular ailment which may or may not be cancer. He is told to go to his physician. That physician may be in the local community or in the clinic of a general or

Read before the Regional Assembly of the Women's Field Army of the American Society for the Control of Cancer, Kansas City, Mo., February 14, 1941.

specialized hospital. It is the job of the Women's Field Army to develop and maintain a sane, practical and not hysterical cancer consciousness, not only among the indigent population but among the whole population, including those in this movement. It is the problem of the medical profession to submit reliable information on cancer to the general population just as it is the problem of the medical profession to diagnose and treat cancer.

The newly organized cancer division of the Public Health Service gives aid to these existing forces in the cancer control movement in the community, the county and the state. That aid may be advisory, technical or financial. It may be temporary or of short or long duration. It comes as the result of a need observed and expressed by the community. These needs can be determined and brought to fruition only by an intelligent cooperation between the medical profession and the general population. And the Women's Field Army of the American Society for the Control of Cancer is such a cross section of our community, not only intelligent but interested. We in cancer work must interest more men and women, young and old. We need growth and I am confident that the growth will be attained because we are building sanely and soundly.

3720 Washington Boulevard.

#### VIRUS OF NEW LUNG DISEASE FOUND BY INTERNATIONAL COOPERATION

Discussing a recent announcement that J. M. Weir, M.D. and F. L. Horsfall, M.D., of the International Health Laboratories, New York, have been able by means of research carried on in New York and the British West Indies to isolate and identify the specific virus of the new type of lung disease known as "acute pneumonitis," *The Journal of the American Medical Association* for March 22 says that "aside from its epidemiologic importance the work of the two men is noteworthy and may long serve as a model of speed and effectiveness in international medical research, an inspiring example of preparedness for future epidemiologic emergencies."

Epidemics of the disease, since it was first described five years ago "have been reported with increasing frequency in a half dozen American states as well as in England and France, from which it is apparent that the disease can assume pandemic [widely distributed] proportions," *The Journal* says.

It is characterized by a remarkably high sickness rate and in some institutions or localities over 50 per cent of all persons have contracted the disease. No deaths have been reported so far in uncomplicated cases.

"The apparent recent increase in the frequency of this disease and its tendency to become pandemic rendered it of sufficient importance to warrant vigorous attempts to determine the causative agent," *The Journal* says.

About a year ago Drs. Weir and Horsfall attempted to infect all of the usual laboratory animals with the disease but without success. In the hope of finding a susceptible animal, it was finally decided to try the mongoose, an animal available in abundance in the Caribbean islands but whose importation to the United States is prohibited. By modern methods of transportation and communication, however, it was found feasible to divide the work between the New York laboratory and the British Tuberculosis Research Association at Kings-

ton, Jamaica. Material from victims of the disease in New York was transported to Kingston and material from the mongoose was sent to New York for analysis.

"Studies of natural methods of infection have shown that the experimental virus disease in the mongoose is readily spread by contact," *The Journal* says. "The evidence therefore seems complete that the mongoose infecting virus is the cause of the current incipient pandemic of acute pneumonitis."

#### EXPLAINS REASON FOR VARYING REPORTS ON RATE OF INCIDENCE OF SYPHILIS

"Recent announcements and bulletins issued by various agencies of the federal government have quoted varying rates for the incidence of syphilis," *The Journal of the American Medical Association* reports. "Thus, one pamphlet states that there are 24 new cases annually for each hundred thousand of the population. A poster, however, carries the statement 'A million new victims each year.' In an endeavor to determine the method by which such figures were reached, a letter was addressed to the Division of Venereal Diseases of the United States Public Health Service, and the following information is supplied: The figure 224 per hundred thousand represents an annual attack rate, based on census material assembled in 1936-1937, indicating the known number of cases of syphilis of less than one year's duration in which treatment was sought from an authorized source of treatment.

"The second statement, namely 'A million new victims each year' is a rate based on information assembled from 1927 to 1930 through surveys of authorized sources of treatment. These reports indicated that 518,000 persons with early syphilis sought medical care and an additional half million persons sought similar care for the first time, although their infections had passed the early stages of the disease. The explanation is, then, that in the lower rates only those seeking medical care for early syphilis are reported, whereas in the higher figure an additional half million persons who failed to seek treatment during the first year of the disease but did so later are included in the statement 'A million new victims each year.'

"In other words, this estimate of a million assumes that each year a half million persons contract the disease who do not seek medical care during the early stages but do so later. Would it not be wholly an assumption that there are each year a half million new cases and a half million old cases in which it is decided for the first time to seek treatment? The Division of Venereal Diseases points out that further studies of the incidence and prevalence of syphilis are under way and it is hoped within the next year to supply more satisfactory statements on the incidence of syphilis in our times."

#### EARLY DIAGNOSIS OF CANCER OF SPINE

From their experience with 7 patients, Samuel A. Wolfson, M.D., Samuel Reznick, M.D., and Lewis Gunther, M.D., Los Angeles, believe that an early and definite diagnosis of malignant spinal metastases (cancer of the spine that has been transferred there from some other part of the body) can be made in spite of negative x-ray evidence, they report in *The Journal of the American Medical Association* for March 15.

They believe that when pain in the spinal column is limited to one or two spinal nerve roots, associated with localized tenderness; when the rate at which red blood cells precipitate (separate and settle down) is increased; when there is an increased level of phosphatase in the blood serum and there is no obvious explanation and demonstrable cause for these changes, that an early diagnosis of spinal metastases can be made.

# THE JOURNAL

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APRIL, 1941

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## EDITORIALS

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### THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.

2. The allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick on proof of such need.

3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.

4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.

5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.

6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.

7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.

8. Expansion of public health and medical services consistent with the American system of democracy.

### THE EIGHTY-FOURTH ANNUAL SESSION

The Eighty-fourth Annual Session of the Missouri State Medical Association will be held in St. Louis, April 28, 29 and 30, 1941. All sessions will be held in the Jefferson Hotel.

The scientific program will include addresses by guest speakers on surgery, internal medicine, urology, neurology, orthopedics, obstetrics and gynecology. Guest speakers at the session will be Drs. Walter C. Alvarez, Rochester, Minnesota; A. E. Bennett, Omaha; Willard M. Allen, St. Louis; Meyer Bodansky, Galveston; Russell L. Cecil, New York; Samuel A. Cosgrove, Jersey City; Clyde L. Deming, New Haven; Lawrence S. Fallis, Detroit; Harrison F. Flippin, Philadelphia; Paul B. Magnuson, Chicago; R. G. Spurling, Louisville, and Jean M. Stevenson, Cincinnati. Titles of addresses of guest speakers appear on page 136.

A preliminary program will be sent to each member prior to the meeting.

Scientific exhibits will add to the instructive value of the session and numerous commercial exhibits will give members opportunity to become acquainted with new products and apparatus.

While the House of Delegates is in session on Monday morning, a clinic sponsored by the faculties of Washington University School of Medicine and St. Louis University School of Medicine will be presented.

The Committee on Maternal Welfare and Infant Care will hold its annual meeting at a luncheon on Monday.

The Council again this year will honor Past Presidents at a dinner open to all members and members of the Woman's Auxiliary on Monday evening.

Round table luncheon discussions will be held on Tuesday and Wednesday.

Medical alumni and fraternity reunions will be held on Tuesday from 6:00 to 7:00.

The House of Delegates will meet on Monday morning and will reconvene at 4:30 p. m. on Monday afternoon. The final session of the House will meet at 4:00 o'clock on Wednesday. The Council will convene at a luncheon meeting on Monday and at 5 o'clock on Wednesday.

The General Committee on Arrangements for the Annual Session is composed of Dr. Curtis H. Lohr, St. Louis, Chairman; Dr. C. E. Fallet, DeSoto, and Dr. H. B. Goodrich, Hannibal. Dr. Daniel L. Sexton, St. Louis, is chairman of the Local Committee on Arrangements.

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### ST. LOUIS HOSPITAL PROGRAM

A new thirteen story ward building of the St. Louis City Hospital was dedicated March 8. Dedication ceremonies were held at 10:30 a. m. and several floors of the building were open for inspection throughout the day. Actual use of the

building will begin in June and it will be in full operation in the following month, according to Dr. R. L. Thompson, St. Louis Hospital Commissioner. The building will have a 500 bed capacity as well as four minor and eight major operating rooms.

This new building is a part of a \$10,000,000.00 hospital program for St. Louis which began in 1933 when a bond issue measure for the purpose was passed. The program includes construction and modernization of the eight institutions in the Hospital Division.

During the period from April 1933 to January 1941 the following improvements have been accomplished: Construction of the Homer G. Phillips Hospital (Negro) including administration building, north ward building, south ward building, nurses' home and equipment for hospital buildings, \$2,399,400.00; improvements of City Hospital including service building and boiler room equipment, clinic building and equipment, general alterations, construction of the Malcolm A. Bliss Psychopathic Institute, laundry building and equipment, kitchen and service building and equipment, miscellaneous construction necessary to begin construction of the new hospital building, new hospital building and equipment, \$4,442,900.00; at Robert Koch Hospital an additional ward building, installation of new equipment and repair of existing equipment and repair of existing buildings, fourth ward building, laundry and power plant and equipment, superintendent's residence, dormitory for employees, \$1,059,000.00; hospital building, dormitory building and various buildings and improvements at the St. Louis Training School, \$295,000.00; at the City Sanitarium solaria for two buildings, addition to kitchen building, alterations to laundry building, power plant service building, miscellaneous alterations to City Infirmary, City Sanitarium and the Isolation Hospital, \$742,000.00.

The completion of this program will include further expansion of the Robert Koch Hospital to a capacity of one thousand beds, modernization of the Isolation Hospital and improvements at the City Infirmary and the Sanitarium.

This program has made the institutions of the St. Louis Hospital Division a well balanced group providing the most modern care, treatment and diagnosis for the indigent sick of the city.

#### DEFERMENT OF MEDICAL STUDENTS

Evidence that the needs of the Army Medical Department for each of the five year training periods set up under the Selective Service Law will be eight thousand medical officers from civilian life each year was presented at a joint conference of the Committee on Medical Preparedness, the Subcommittee on Medical Education of the Health and Medical Committee of the Coordinator for Health and Welfare and the Council on Medical Education

and Hospitals of the American Medical Association in Chicago on February 15.

Need of any such number of medical men places a heavy demand on the medical resources of the country and involves many problems. One of the most urgent problems, also connected with military demands, is the drafting of medical students in the Army. Approximately five thousand two hundred men are graduated each year from approved medical colleges and each of them must have at least one year of internship. Once the internship is completed, approximately three thousand five hundred of these graduates will be needed in the services of the Army, Navy and Public Health Service for a year's training.

Participants of the meeting in Chicago felt that deferment of medical students is an essential factor in maintaining the present standards of medical care and in meeting the requirements of the emergency facing the country. Therefore the following communication was sent to the Director of the Selective Service System at Washington:

"1. Since the five year preparedness program of the government will require about three thousand five hundred medical graduates annually to enter the service of the Army, Navy and Public Health Service for a year's training, the education of physicians must be continued at the present level and without interruption.

"2. This is so vital to military and general welfare that we urge the Director of Selective Service to make clear to draft and appeal boards that it is in the interest of the country to provide deferment of military service for students in good standing in approved medical schools who may be called for duty under the Selective Service Act until they shall have obtained the degree of doctor of medicine. The Committee on Medical Preparedness of the American Medical Association offers its facilities for the verification of the credentials and such other information as may be needed in connection with the application of any medical student for deferment.

"3. In order to provide a continuing supply of qualified medical students for the medical schools of this country, we urge also that students who have been accepted for admission to approved medical schools in a period not to exceed twelve months preceding enrollment be granted deferment of military training in order that they may complete the requirement for admission to medical schools.

"4. Suggestions that the number of medical students be increased can have no relationship whatever to the situation now confronting us because such an increase in the number of students admitted to medical schools during the current year could not in any way affect the number of doctors available for either military or civilian service before 1946. Such an increase of medical classes would surely tend to lower the quality of instruction and in the end cause a deterioration of medical service."

## NEWS NOTES

Dr. William H. Olmsted, St. Louis, was a guest of the Belleville Branch of the St. Clair County (Illinois) Medical Society at Belleville on March 5 and spoke on "Vitamin Therapy."

Dr. H. I. Spector, St. Louis, was the guest speaker at a meeting of the St. Clair County (Illinois) Medical Society at East St. Louis on March 6. His subject was "Differential Diagnosis and Treatment of Common Diseases of the Lung."

The Trudeau Club of St. Louis met at the St. Louis Medical Society Building on March 6. Dr. Henry Pinkerton, St. Louis, spoke on "An Etiological Discussion of the Atypical Pneumonia, With a Pathological Description of Two Cases Caused by a Protozoon (*Toxoplasma*)."

Four members of the graduating class of 1881 of the St. Louis Medical College held the sixtieth reunion of the class on March 3 in St. Louis. Those attending were Drs. Max C. Starkloff, Willis Hall, Amand Ravold and James A. Dickson, St. Louis. Dr. William V. Guttery, Middleton, Illinois, the only other living member of the class, was not present.

Drs. Ralph A. Kinsella and David P. Barr, St. Louis, will present lectures and clinics at the meeting of the American College of Physicians in Boston, April 21 to 25. Dr. Kinsella will speak on "The Chemotherapy of Subacute Bacterial Endocarditis" and present a clinic on "Inflammatory Rheumatism." Dr. Barr will talk on "The Clinical Implications of Phosphorus and Calcium Metabolism" and present a clinic on "Problems in Endocrinology."

The Army Medical Library, Washington, D. C., has added a microfilm copying service and a weekly current list of medical literature. The microfilm copying service was established to render the resources of the Library available to the many research workers at a distance from Washington who are unable to consult its extensive collections personally. The plan avoids the disadvantage of lending the journals themselves and thus impairing the reference character of the Library. This method is the most economical procedure so far devised for making a single copy of printed material. Microfilm copies are strips of 35 mm. motion picture film with images of printed pages photographed upon them in sequence. The text can be read only with the aid of a magnifier or projector. A rate of 30 cents per complete article not exceeding thirty pages in length has been established. This project

is conducted under the auspices of a recently organized group of Friends of the Army Medical Library.

An organization to carry on in the Western Hemisphere the scientific and social work of the International Union Against Cancer has been incorporated under the laws of the State of New York as the Pan-American League Against Cancer. The International Union Against Cancer was engaged in cancer control work on an international scale. Fifty-two countries were affiliated in the International Union which maintained headquarters at Paris, France, until recently. The aims of the new organization as outlined in the certificate of incorporation are to promote and encourage the international fight against cancer, to coordinate in the countries of the American continent the scientific study and research in cancer and to publish and disseminate information thereon, to engage in social welfare work in its relation to the problem of cancer and to promote the establishment of national organizations throughout the Western Hemisphere to engage in similar activities.

## ORGANIZATION ACTIVITIES

### MISSOURI STATE MEDICAL ASSOCIATION

Eighty-Fourth Annual Session  
St. Louis, April 28, 29, 30, 1941

#### Preliminary Program

#### Monday, April 28

- 9:30 a. m. House of Delegates.
- 10:00 a. m. Dry Clinic on current clinical problems.  
Conducted jointly by Washington University School of Medicine and St. Louis University School of Medicine.
- 12:00 noon. Council.
- 12:00 noon. Annual meeting of the Committee on Maternal Welfare, Dr. Samuel A. Cosgrove, Jersey City, guest speaker.
- 2:30 p. m. General Meeting.
- 4:30 p. m. House of Delegates.
- 7:00 p. m. Dinner in Honor of Past Presidents.

#### Tuesday, April 29

- 8:30 a. m. General Meeting.
- 12:00 noon. Round Table Luncheon.
- 2:00 p. m. General Meeting.
- 6:00 to 7:00 p. m. Medical Alumni and Fraternity Reunions.
- 7:00 p. m. St. Louis Medical Society Entertainment.

#### Wednesday, April 30

- 8:30 a. m. General Meeting.
- 12:00 noon. Round Table Luncheon.

2:00 p. m. General Meeting.  
4:00 p. m. House of Delegates.  
5:00 p. m. Council.

### Scientific Program (Guest Speakers)

- Willard M. Allen, M.D., St. Louis, "Clinical Use of the Sex Hormones." "The Significance of Abnormal Bleeding."
- Walter C. Alvarez, M.D., Rochester, Minnesota, "Puzzling Types of Abdominal Pain." "What Is the Matter With the Patient Who Is Always Tired?"
- Bennett, A. E., M.D., Omaha, "Modern Treatment of the Mentally Ill." "Curare in Neuropsychiatry."
- Bodansky, Meyer, M.D., Galveston, "The Use of Laboratory Data in Clinical Medicine." "Fetal-Maternal Interdependence: Nutritional and Metabolic Factors."
- Cecil, Russell L., M.D., New York, "The Treatment of Chronic Arthritis." "The Chemotherapy of Pneumonia."
- Cosgrove, Samuel A., M.D., Jersey City, "Management of Abruptio Placentae."
- Deming, Clyde L., M.D., New Haven, "Relation of Hypertension to Renal Disease." "Development of Benign Prostatic Overgrowth."
- Fallis, Lawrence S., M.D., Detroit, "Regional Enteritis." "Diagnosis and Treatment of Common Anorectal Diseases."
- Flippin, Morrison F., M.D., Philadelphia, "Cardinal Principles of Sulfonamide Therapy." "Modern Control of Pneumonia."
- Magnuson, Paul B., M.D., Chicago, "Differential Diagnosis of Conditions Causing Pain in the Lower Back." "Fractures on the Battle Field and the Road Side. How Do They Differ?"
- Spurling, R. G., M.D., Louisville, "Herniated Nucleus Pulposus." "The Painful Arm and Shoulder With Special Reference to the Problem of the Scalenus Neurocirculatory Compression."
- Stevenson, Jean M., M.D., Cincinnati, "Surgical Care of Fresh Traumatic Wounds." "Local Isolation Treatment of Boils."

### BUDGET FOR 1941

Salaries—	
Office .....	\$ 8,750.00
JOURNAL .....	4,000.00
Printing of THE JOURNAL .....	7,100.00
Public Relations .....	3,300.00
Defense .....	1,000.00
Postage .....	800.00
Postgraduate Instruction .....	1,200.00
Printing and Stationery .....	700.00
Traveling Expenses of Executive Secretary .....	1,100.00
Telephone and Telegraph .....	600.00
Rent of Office and Light .....	1,100.00
Meetings: .....	4,000.00
Annual Session	
Council and Councilors' Expenses	
Committee Meetings and Conferences	
Delegates to A. M. A.	
General Expense and Miscellaneous .....	600.00
	<u>\$34,250.00</u>

### FINANCIAL STATEMENT FOR 1940

R. A. LENNERTSON & COMPANY  
ACCOUNTANTS  
SAINT LOUIS

ROBERT A. LENNERTSON  
CERTIFIED PUBLIC ACCOUNTANT

MEMBER AMERICAN INSTITUTE  
OF ACCOUNTANTS

March 17, 1941.

Missouri State Medical Association,  
St. Louis, Missouri.

Gentlemen:

We have completed our examination of the accounts of the Missouri State Medical Association for the year 1940 and we prepared therefrom the following attached statements:

- Exhibit A. Balance Sheet.  
Exhibit B. Statement of Income and Expenses.  
Exhibit C. Statement of Committee and Meeting Expenses.  
Exhibit D. Dues Receivable and Membership by Counties.

#### SCOPE OF AUDIT

The recorded transactions for the year were examined, cash receipts were traced in total into the bank account as deposits and the disbursements were verified with paid checks, purchase invoices and other data on file. Certificates were obtained from the banks in verification of the cash balances at December 31, 1940, and the cash on hand was counted.

The asset and liability accounts, as set forth in Exhibit A, were substantiated by comparison with the records of the Association.

Selective tests were made of the income from dues and JOURNAL advertising and our tests indicate that the income from these sources has been properly accounted for on the books. Space in THE JOURNAL not occupied by articles, editorials and paid advertising has been filled by publishing reciprocal and complimentary advertisements.

#### BALANCE SHEET

The balance sheet, Exhibit A, presents the asset and liability accounts of the Missouri State Medical Association as of December 31, 1940. This statement shows that the Association is in a sound financial condition with cash and accounts receivable in the amount of \$12,948.02 and current accounts payable of \$790.44. It will be noted that the dues receivable in the sum of \$3,381.00 are offset by a reserve in a like sum. This amount represents delinquent dues receivable which are listed by counties in the attached Exhibit D. The amount of delinquent dues was reduced from \$4,451.00 at the beginning of the year to \$3,381.00 at the end of the year.

#### STATEMENT OF INCOME AND EXPENSES

The financial result of the Association's activities for the year 1940 was an excess of income over expenses in the sum of \$1,136.21 as set forth in the attached Exhibit B. General activities accounted for \$995.51 of the net income and the balance \$140.70 was derived from THE JOURNAL publication. A comparative summary of the income and expense totals for the past two years follows:

	Year 1940	Year 1939
Income .....	\$34,595.97	\$34,681.02
Expenses .....	33,459.76	33,872.81
Net income .....	\$ 1,136.21	\$ 808.21

In the attached statements, members' dues are taken into earnings as collected whereas the other items of income and expense are taken up on the accrual basis.

#### GENERAL

Fidelity Bonds in favor of the Missouri State Medical Association cover the Treasurer in the sum of \$20,000.00 and the Executive Secretary in the sum of \$1,000.00.

Fire insurance is carried on the office contents in the sum of \$1,000.00, the figure at which the furniture and fixtures are stated on the books.

The records examined by us were found to have been well maintained throughout the year and the method of accounting used was consistent with that used in the preceding year.

Yours very truly,  
R. A. LENNERTSON AND COMPANY,  
By R. A. Lennertson,  
Certified Public Accountant.

EXHIBIT A.

### Missouri State Medical Association Balance Sheet as of December 31, 1940

Assets	
Cash:	
General Fund .....	\$2,066.31
Public Relations Fund .....	2,500.00
Defense Fund .....	2,500.00
Sinking Fund .....	5,000.00
	<u>\$12,066.31</u>
Accounts Receivable—Advertisers .....	\$1,081.71
Less Reserve for Bad Debts .....	200.00
	<u>881.71</u>
Dues Receivable—Exhibit D .....	3,381.00
Furniture and Fixtures .....	1,000.00
Prepaid Expense—JOURNAL Printing and Postage .....	557.96
	<u>\$17,886.98</u>

## Liabilities

Accounts Payable—Supplies and Expenses	\$	790.44
Deferred Credit to Income:		
Advance Payments by Advertisers .....	\$	169.50
Advance Payments by Exhibitors .....	476.00	645.50

Contingent Liability to Members on  
Eleven Malpractice Suits—\$3,300.00

Reserve for Uncollected Dues .....	3,381.00
Reserve for Fund Balances:	
General Fund .....	\$2,066.31
Public Relations Fund .....	2,500.00
Defense Fund .....	2,500.00
Sinking Fund .....	5,000.00

Surplus .....	1,003.73
	\$17,886.98

## EXHIBIT B.

Missouri State Medical Association  
Statement of Income and Expenses for the Year 1940

Particulars	General Activities	JOURNAL Pub- lication	Together
INCOME:			
Dues received (includes \$1.00 Per Member Annually for THE JOURNAL) .....	\$19,740.00	\$ 2,918.00	\$22,658.00
Rentals—Annual Session Ex- hibit Space .....	1,050.00		1,050.00
Rent from Subtenant (office space) .....	495.00		495.00
Subscriptions to THE JOURNAL —Nonmembers .....		34.35	34.35
Advertising Space—THE JOUR- NAL .....		10,358.62	10,358.62
Total Income .....	\$21,285.00	\$13,310.97	\$34,595.97

## EXPENSES:

Officers' Salaries .....	\$ 5,400.00	\$ 2,899.92	\$ 8,299.92
Office Salaries .....	2,820.00	1,500.00	4,320.00
Office Rent and Light .....	1,589.80		1,589.80
Postage .....	994.53	352.45	1,346.98
Stationery, Printing and Of- fice Supplies .....	691.80		691.80
THE JOURNAL—Paper, Printing, Mailing, etc. ....		7,072.79	7,072.79
Telephone and Telegraph ...	601.70		601.70
Insurance .....	58.73		58.73
Fees, Taxes and General Ex- penses .....	628.17		628.17
Bad Debts .....		119.61	119.61
Cash Discounts to Advertisers ..		427.48	427.48
Commissions on JOURNAL Ad- vertising .....		798.02	798.02
Traveling Expense—General Committee and Meeting Ex- penses (Exhibit C) ..	1,247.93		1,247.93
Defense—Malpractice Suits ..	6,156.83		6,156.83
Equipment Purchases in Lieu of Depreciation .....	100.00		100.00
			None
Total Expenses .....	\$20,289.49	\$13,170.27	\$33,459.76
Net Income for the Period ....	\$ 995.51	\$ 140.70	\$ 1,136.21

## EXHIBIT C.

Missouri State Medical Association  
Statement of Committee and Meeting Expenses  
for the Year 1940

Annual Session .....	\$ 2,945.16
Council Meetings .....	\$164.58
Councilors' Expenses .....	73.35
Delegates to A. M. A. ....	575.40
Woman's Auxiliary .....	43.86
Conferences and Councilor District Meetings .....	\$947.58
Conservation of Eyesight .....	163.85
Control of Venereal Disease .....	17.48
Industrial Health .....	20.70
Medical Economics .....	66.04
Medical Preparedness .....	152.84
Program Committee .....	63.17
Public Relations .....	342.20
Study of Medical Practice Laws .....	6.07
Cancer Committee .....	115.52
Postgraduate Instruction:	
Mental Health .....	\$ 28.65
Speakers' Expenses .....	430.38
Total .....	\$ 6,156.83

## EXHIBIT D.

Missouri State Medical Association  
Dues Receivable and Membership by Counties  
as of December 31, 1940

	Number of Mem- bers	1937 and Prior	Dues Receivable				Pre- paid Dues
			1938	1939	1940	Total	
Adair-Schuyler- Knox-Sullivan- Putnam .....	34						
Andrew .....	7			\$ 8	\$ 8	\$ 16	
Audrain .....	17						
Barry .....	9						
Barton .....	11	\$ 24	\$ 16	24	24	88	
Bates .....	11						\$ 8
Benton .....	6						
Boone .....	45				16	16	
Buchanan .....	105			8	16	24	32
Butler .....	18	8	24	32	56	120	
Caldwell-Livingston .....	16		8	8	24	40	
Callaway .....	17				16	16	
Camden .....	2						
Cape Girardeau .....	38			8	16	24	8
Carroll .....	11						
Carter-Shannon .....	7						
Cass .....	19			8	16	24	
Chariton .....	17						56
Christian .....	4						
Clay .....	29			8	8	16	
Clinton .....	10						
Cole .....	38		16	32	48	96	8
Cooper .....	17	72	24	40	48	184	
Dallas-Hickory- Polk .....	13						
DeKalb .....	3						
Dent .....	5						
Dunklin .....	23				24	24	
Franklin .....	22				2	2	
Gasconade Maries- Osage .....	3	40	8	16	15	79	
Greene .....	110						
Grundy-Daviess .....	22	40	16	16	48	120	
Harrison .....	7	56	8	8	24	96	
Henry .....	14						
Holt .....	7						
Howard .....	7						24
Jackson .....	584				12	12	56
Jasper .....	64				12	12	4
Jefferson .....	17				16	16	8
Johnson .....	18				8	8	
Laclede .....	12				16	16	
Lafayette .....	30			8	16	24	
Lawrence-Stone .....	24	8	8	8	32	56	
Lewis Clark- Scotland .....	11	32	16	24	40	112	
Lincoln .....	10						
Linn .....	15				8	8	
Macon .....	6						
Marion-Ralls .....	30				24	24	
Mercer .....	8						24
Miller .....	8						
Mississippi .....	11		8	8	24	40	
Moniteau .....	5						
Montgomery .....	6						48
Morgan .....	3						
New Madrid .....	4	72	16	16	24	128	
Newton .....	12						
Nodaway-Atchison- Gentry-Worth .....	42	64	16	16	40	136	8
Pemiscot .....	15				16	16	
Perry .....	4						32
Pettis .....	32						
Phelps-Crawford .....	21						
Pike .....	13		8	8	8	24	
Platte .....	11			16	24	40	
Pulaski .....	6						
Randolph-Monroe .....	26		8	16	24	48	
Ray .....	10	40	16	24	24	104	
St. Charles .....	27				16	16	
St. Francois-Iron- Madison- Washington- Reynolds .....	40						16
St. Genevieve .....	6						48
St. Louis .....	204		8	12	136	156	8
St. Louis City .....	1121	24		8	968	1000	52
Saline .....	24	16	8	8	8	40	
Scott .....	13		8	8	16	32	
Shelby .....	6			8	8	16	
South Central .....	31			12	20	32	
Stoddard .....	9				24	24	
Taney .....	2	64	8	8	8	88	
Vernon-Cedar .....	30		8	16	40	64	
Wayne .....	4	8	32	32	32	104	
Webster .....	4						
Totals .....	3303	\$568	\$288	\$472	\$2053	\$3381	\$440

## MISCELLANY

### 1941 LEGISLATION

To avoid any question as to the constitutionality of House Bills Nos. 61, 62, 63, 64 and 67, introduced in the House of Representatives on February 13 by Dr. Emmett F. Cook, Buchanan County; Dr. A. J. Gray, Atchison County, and Dr. J. F. Harrison, Audrain County, jointly, these bills were reintroduced on February 27 and were referred to the Committee on Public Health. These bills and their status are as follows:

House Bill No. 192 (formerly H. B. No. 62). Prohibiting the taking of examinations to practice any branch of the healing art except after examination in the Basic Sciences, Anatomy, Physiology, Chemistry, Bacteriology and Pathology by a state board of examiners.

No hearing has been held on this bill.

House Bill No. 193 (formerly H. B. No. 62). Prohibiting the use by any person licensed to practice medicine, surgery, dentistry, optometry, osteopathy, chiropractic, chiropody or veterinary surgery, or any two or more of such professions, and any person permitted to practice the curing, healing or remedying of ailments, defects or diseases of body or mind, from using the prefix "Doctor" or "Dr." in connection with his name in any letter, business card, advertisement, prescription blank, sign or public listing or display without affixing thereto suitable words or letters designating the degree held and representing the profession he is authorized to practice, making violation of the Act a misdemeanor and fixing the punishment therefor, and providing that the Act shall not apply to the use of said designation by doctors of letters, doctors of science, doctors of law, doctors of divinity, or doctors of philosophy not practicing the curing, healing or remedying of bodily or mental ailments, defects or diseases.

On March 6 the Committee on Public Health reported this bill examined and recommended that it pass. On March 18 the bill was placed on the Calendar for third reading and final passage. This bill was amended to exempt any person holding any honorary academic degree granted by any recognized school, college or university.

House Bill No. 194 (formerly H. B. No. 67). Amending Section 9983, Article 1, Chapter 59, of the Revised Statutes of Missouri, 1939, relating to the examination and qualifications of applicants to practice medicine or surgery in this state by omitting the period after the word "equivalent" in line 15 of said Section and by inserting at the end of said line the following: "and satisfactory evidence of completion of premedical education consisting of a minimum of 60 semester hours of college credit in acceptable subjects from a reputable college or university approved by said Board."

On March 13 the Committee on Public Health reported this bill examined and recommended that it pass. The bill was perfected.

House Bill No. 201 (formerly H. B. No. 64). Requiring every person licensed to practice medicine or surgery in this State to register biennially with the State Board of Health, providing for the method of application and the fees for such registration, the issuance of certificates of registration, and display of the same, requiring the State Board of Health to be notified of changes in the location of the registrant's office, requiring retired licensed practitioners of medicine and surgery to file affidavits with the State Board of Health in lieu of annual registration, providing for the disposal of registration fees and penalties for failure to register. (Registration fee \$1.00 per biennium.)

On March 19 the Committee on Public Health reported this bill examined and recommended that it pass.

House Bill No. 202 (formerly H. B. No. 63). Declaring

that the practice of medicine or surgery by unlicensed persons or the doing, committing or continuing of acts prohibited by Section 9988, Revised Statutes of Missouri, 1939, is inimical to public health and constitutes a public nuisance and also authorizing Circuit Court injunction proceedings by the Attorney General, Circuit or Prosecuting Attorneys in the name of the State or by the State Board of Health in its own name to enjoin such practice or attempted practice and such acts or attempted acts; prescribing the venue, practice and procedure in such actions; providing that such injunction may issue without proof of present or future damage; prohibiting temporary injunctions pursuant to this Act; and providing that such proceedings under this Act are in addition to and not in lieu of proceedings to revoke licenses to practice medicine and surgery or criminal proceedings against and punishment of such persons.

No hearing has been held on this bill.

Senate Bill No. 7. Introduced by Senator Michael Kinney, St. Louis. Providing for liens in favor of public and charity-supported private hospitals, clinics and other institutions for the care of the sick, furnishing care, treatment and maintenance to persons injured by the negligence or wrongful act of others, upon the rights of action, claims or demands of such injured persons against the persons causing such injury, for damage on account of such injury, and upon the proceeds of any settlement of any such right of action, claim or demand; and providing for notice of and the enforcement of such liens.

This bill has been passed by the Senate.

Senate Bill No. 15. Introduced by Senator Allen McReynolds, Carthage. To further the control of congenital syphilis by requiring a serological blood test for syphilis in pregnant women, requiring the filling out of reports to the State Department of Health, setting up supervisions necessary to protect the health of the mother and child, and provide a penalty for failure or refusal to observe the law.

A hearing was held by the Committee on Public Health on March 18.

Senate Bill No. 37. Introduced by Senator Michael Kinney, St. Louis. Providing for medical examination for venereal diseases of applicants for a marriage license and providing rules and regulations by the State Board of Health.

This bill was referred to the Committee on Public Health on February 20.

### IMPORTANCE OF ADEQUATE RIBOFLAVIN

An adequate supply of riboflavin, also called vitamin B<sub>2</sub>, in later life will not compensate for a deficiency in childhood, *Hygeia*, *The Health Magazine* for February warns.

Milk is the richest source of riboflavin. It is also abundantly present in those plant and animal tissues in which the most active chemical changes take place, such as the leafy and germ portions of plants and the liver, kidney and heart organs. The name riboflavin indicates that the vitamin contains a sugar called ribose and flavin, a yellow pigment containing nitrogen.

"Symptoms of riboflavin deficiency," *Hygeia* says, "are collectively designated 'ariboflavinosis' and are characterized by a 'cheilosis' or inflammation and scaling around the corners of the mouth, a condition called 'poor man's mouth' in some sections of the country, lesions around the nose and eyes and functional disturbances of the eye.

"Riboflavin is destroyed by strong sunlight. A practical application of this fact for city dwellers is to make sure that the milk, delivered early in the morning, is not left standing for a long period of time in the bright rays of the sun. Milk should be refrigerated as soon as possible after it is delivered."

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

- Chariton County Medical Society, December 2, 1940.
- Montgomery County Medical Society, December 2, 1940.
- Perry County Medical Society, December 14, 1940.
- Ste. Genevieve County Medical Society, December 17, 1940.
- Camden County Medical Society, January 7, 1941.
- Andrew County Medical Society, January 9, 1941.
- Benton County Medical Society, January 28, 1941.
- Clinton County Medical Society, February 6, 1941.
- Holt County Medical Society, February 8, 1941.
- Macon County Medical Society, February 15, 1941.
- Moniteau County Medical Society, February 15, 1941.

#### ASSOCIATE EDITORS: COUNCILORS OF THE TEN COUNCILOR DISTRICTS

##### FIRST COUNCILOR DISTRICT

A. S. BRISTOW, PRINCETON, COUNCILOR  
Mercer County Medical Society

The Mercer County Medical Society met at the office of Dr. C. J. Laws, Princeton, February 27, with Dr. G. M. Bristow, Princeton, presiding.

Those present were Drs. C. J. Sellers, Mt. Moriah; T. S. Duff, Cainesville; C. P. Pickett, Mercer; C. J. Laws, G. M. Bristow, A. S. Bristow and C. R. Buren, Princeton.

Bills before the legislature were discussed.

A communication regarding the Community Health League of Missouri was read.

The Society voted endorsement of House Bills 61, 62, 63, 64, 65 and 67.

A resolution commending the Honorable Roy Bryan for his wholehearted support of the bills endorsed by the Society was adopted.

A resolution commending and congratulating Drs. Emmett F. Cook, J. F. Harrison and J. A. Gray on their work in the legislature and expressing appreciation to them was adopted.

J. M. PERRY, M.D., Secretary.

##### Nodaway-Atchison-Gentry-Worth Counties Medical Society

The Nodaway-Atchison-Gentry-Worth Counties Medical Society held a dinner meeting at the Linville Hotel, Maryville, March 3, with the president, Dr. Samuel E. Simpson, Stanberry, presiding.

Members present were Drs. Francis R. Anthony, Charles T. Bell, J. A. Bloomer, Carlos E. Cossins, Loren E. Egley, W. R. Jackson, R. C. Person and W. M. Wallis, Jr., Maryville; Charles W. Kirk, Hopkins; Eugene Crowson, Pickering; Joseph C. Manning, Skidmore; Charles D. Humberd, Barnard; J. M. Broyles, Conception Junction; B. F. Byland, Burlington Junction; Henry C. Bauman, Fairfax; John M. Davis, Charles H. Flynn and Claude D. Haskell, Tarkio; Emmett B. Settle, Rock Port, and Samuel E. Simpson, Stanberry. Guests present were Drs. John S. Knight and James Callaway, Kansas City; R. L. Strobach, Cameron; W. Logan Wood, Bolckow, and four dentists, Drs. Ross Deatz, Rock Port; C. L. Johns, Tarkio; Ed. Miller, Hopkins, and Harry L. Stimson, Maryville.

Dr. John S. Knight, Kansas City, spoke on "What There Is of Interest to the General Practitioner in the Field of Bronchoscopy and Esophagoscopy." His talk was illustrated with lantern slides of roentgenograms and photographs and a collection of one hundred foreign bodies which he had removed from the bronchi of patients.

The president announced the death of Dr. Charles E. Benham, Tarkio, on February 20, as the result of injuries sustained in an automobile accident three days previously. On motion the president appointed Drs. Charles H. Flynn, Tarkio; Emmett B. Settle, Rock Port, and W. R. Jackson, Maryville, as a committee to draft resolutions concerning Dr. Benham's death.

Dr. R. L. Strobach, Cameron, District Medical Officer of the Missouri State Board of Health, spoke briefly on the work of his office and its concern in the community.

CHARLES D. HUMBERD, M.D., Secretary.

##### SECOND COUNCILOR DISTRICT

H. B. GOODRICH, HANNIBAL, COUNCILOR

Adair-Schuyler-Knox-Sullivan-Putnam Counties Medical Society

The Adair-Schuyler-Knox-Sullivan-Putnam Counties Medical Society held its regular monthly meeting December 5 at Dr. S. L. Freeman's office, Kirksville.

The following officers were elected: President, Dr. Clifford E. Henry, Kirksville; vice presidents, Dr. F. E. Luman, Edina, Knox County; Dr. Ida Nulton, Lancaster, Schuyler County; Dr. Pearl V. Hart, Coatesville, Putnam County; Dr. J. S. Gashwiler, Novinger, Adair County; Dr. J. S. Montgomery, Milan, Sullivan County; secretary-treasurer, Dr. A. F. Miller, Kirksville; board of censors, Drs. A. B. Cramb and R. O. Stickler, Kirksville, and J. S. Montgomery, Milan.

Dr. George E. Grim, Kirksville, presented an excellent talk on "Surgery of the Prostate Gland," illustrated by lantern slides. His talk was based upon results obtained in sixty cases of prostatic disease operated upon by him at the Grim-Smith Hospital, Kirksville.

A. F. MILLER, M.D., Secretary.

##### SIXTH COUNCILOR DISTRICT

A. J. CAMPBELL, SEDALIA, COUNCILOR

Saline County Medical Society

The Saline County Medical Society met January 7.

The following officers were elected: President, Dr. Charles W. Caldwell, Slater; vice president, Dr. Coburn Ellis, Sweet Springs; secretary, Dr. O. H. Damron,

Slater; censor, Dr. John R. Lawrence, Marshall; delegate, Dr. Robert W. Kennedy, Marshall; alternate, Dr. Luther S. James, Blackburn.

A transfer card to the Scott County Medical Society was issued to Dr. E. A. Belden.

A transfer card to the Callaway County Medical Society was issued to Dr. N. K. Pope.

Dr. James Fonda was elected to membership.

O. H. DAMRON, M.D., Secretary.

### TENTH COUNCILOR DISTRICT

E. J. NIENSTEDT, SIKESTON, COUNCILOR

St. Francois-Iron-Madison-Washington-Reynolds  
County Medical Society

The St. Francois-Iron-Madison-Washington-Reynolds County Medical Society met at the St. Francois County Courthouse, Farmington, February 28, at 7:30 p. m.

Dr. Paul Murphy, Koch, gave an interesting talk on "Diagnosis of Clinical Pulmonary Tuberculosis."

Dr. James L. Mudd, St. Louis, spoke on "Surgical Treatment of Pulmonary Tuberculosis." This was followed by an excellent motion picture showing the results of operative cases and numerous roentgenograms of cases before and after treatment.

Miss Dora Copenhaver, R. N., Crippled Children's Field Nurse, discussed the present established State Service for Indigent Children.

Mr. Charles Van Wiley, Farmington, Assistant Supervisor of the Farm Security Administration, spoke on the medical care of the F.S.A. farm families. It was decided that no action would be taken by the Society and that Dr. Carl F. Vohs, St. Louis, Chairman of the Committee on Medical Economics, be asked to meet with the Society and discuss the Farm Security Administration.

The following were present: Drs. Homer Appleberry and Paul L. Jones, Flat River; Reuben Appleberry, C. C. Ault, F. R. Crouch, G. Tivis Graves, N. W. Hawkins, Emmett F. Hoctor, Ralph Kulhman, Farmington; John W. Hunt, Leadwood; H. M. Roebber, David E. Smith and Van W. Taylor, Bonne Terre; J. L. Thurman, Potosi.

G. TIVIS GRAVES, M.D., Secretary.

### Scott County Medical Society

The Scott County Medical Society met at the Sikeston General Hospital, Sikeston, February 19.

The following were present: Drs. H. M. Kendig, G. W. H. Pressnell, T. C. McClure, H. B. Throgmorton, M. G. Anderson, H. A. Dunaway and E. A. Belden, Sikeston; J. A. Cline, Oran; T. L. Waddle, Dexter; W. O. Finney, Chaffee.

The hospital was inspected and approved and the following resolution adopted; *Resolved*, That the Scott County Medical Society heartily approves and endorses the Sikeston General Hospital, its personnel, equipment and facilities.

The following officers were elected: President, Dr. E. J. Nienstedt, Sikeston; vice president, Dr. G. W. H. Pressnell, Sikeston; secretary and treasurer, Dr. W. O. Finney, Chaffee; board of censors, Drs. H. M. Kendig and H. A. Dunaway, Sikeston, and G. T. Dorris, Illmo.

A late film on the hospital treatment of pneumonia was shown by the Lederle Company.

By vote the Society instructed the secretary to write the State Board of Health and ask that a pneumonia control station be located in the Sikeston General Hospital.

A letter from the Committee on Public Policy was read and discussed.

Dr. Aretus D. Martin, Sikeston, was elected a member of the Society.

W. O. FINNEY, M.D., Secretary.

## WOMAN'S AUXILIARY

### WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

19th Annual Meeting, Cleveland

President, Mrs. V. E. Holcombe, Charleston, W. Va.  
President-Elect, Mrs. R. E. Mosiman, Seattle, Wash.

### WOMAN'S AUXILIARY TO THE MISSOURI STATE MEDICAL ASSOCIATION

President, Mrs. Stanley P. Howard, Jefferson City.  
President-Elect, Mrs. J. J. Drace, Chillicothe.  
Adviser, Dr. Herbert L. Mantz, Kansas City.

The Woman's Auxiliary to the Missouri State Medical Association will hold its seventeenth annual meeting in St. Louis, April 29 and 30.

The Coronado Hotel will be the headquarters for the annual meeting. The St. Louis women are planning a splendid program of entertainment and are expecting a large attendance.

This year eighteen county organizations have striven to follow the national and state programs in continuing "service to humanity." Missouri is proud to acknowledge three prizes in the *Hygeia* contest: Cass County, first in Group I; Buchanan County, first in Group IV, and Missouri, third state winner.

Splendid work has been done in public relations. Each Auxiliary has had a public relations meeting. Other activities include organization of speaker's bureaus, promotion of radio broadcast of "Doctors at Work," cooperation with the Women's Field Army of the Society for the Control of Cancer, Red Cross, Bundles for Britain, preschool clinics, library advisory committees and other lay organizations. The Jackson County Auxiliary cooperated with the Jackson County Health Forum in bringing prominent men to Kansas City once a month for lectures to the public on health education. Mrs. V. E. Holcombe, Charleston, West Virginia, was a guest of the St. Louis Auxiliary on March 2. The *National Quarterly Bulletin* has been publicized. Four publications of the *Missouri Bulletin* have kept state members in touch with county, state and national Auxiliary activities.

The Woman's Auxiliary to the American Medical Association will convene in Cleveland, June 2 to 6. Hotel reservations should be made at once through Dr. Edward F. Kieger, Chairman of the Committee on Hotels and Housing, 1604 Terminal Tower Building, Cleveland.

## BOOKS FOR LEISURE MOMENTS

### THE THIRD GENERATION PHYSICIAN

Unless he is at least the third physician in the familial line, a Chinese doctor is not entitled to the respect of his patients. Through reiteration of the virtues of earlier physicians the Chinese have come to venerate the medical profession. In "The Chinese Way of Medicine" (Johns Hopkins Press, Baltimore), Edward H. Hume gives a fascinating essay upon this truly old system of healing. The book combines much of the mystic with a critical appreciation of the benefits to be derived from the judicious administration of drugs in combination with physical therapy—and weird incantation.

The first chapter is a magnificent exposition, thoroughly sympathetic, of the Chinese identification of himself with the whole substance of nature. It explains

his seeming inconsistencies because he believes that a misadventure on his part will be reflected in injury to his dead ancestors. The second chapter deals with the great names in Chinese medicine, among them Li Shih-Chen who wrote a fifty-two volume medical work. Chapter three contains engrossing accounts of a host of herbs, some of which have been adopted into western medicine.

Despite its mysticism, its superstition and its ritual, Chinese medicine appears to have had a firm foundation of accurate observation, careful differential diagnosis and sound life giving therapy. B. Y. G.

### PHYSIOLOGY FOR CHILDREN

Berl Ben Meyr, one of the technical advisers to the movie industry, writes engagingly of the human body under the title "Your Own True Story" (Caxton Printers, Caldwell, Idaho). Addressed to older children it skips quickly over the beginnings of life and the realities of reproduction and gives accurately the organ systems of the body. The line drawings of Shiro Miyazaki are worthy of more than passing notice and go far to clarify for the adolescent mind the author's intention to present an understandable account of the human mechanism which will take the mystery out of the business of body function. B. Y. G.

### GOITER FOR THE LAYMAN

That the layman may have a smattering of knowledge in the event that he acquires a goiter or that he may prevent one, Dr. Israel Bram has written "How to Prevent Goiter" (E. P. Dutton, New York). It will be understood by the average reader. On the whole it is couched in too general terms but perhaps that is a virtue of the volume. Considerable space is given to methods of gaining weight, of losing weight and of living in a world of increasing complexity in a way to prevent goiter. The author eschews meat because of its stimulating effect upon the thyroid. He advocates medical as opposed to surgical management of the non-adenomatous patient. B. Y. G.

### REPRODUCTION AND MORES

American parents are not reproducing in number sufficient to maintain the population. In the cities the net result of marriage is scarcely three fourths of the number of persons in the previous generation. In rural areas somewhat more children are being produced but not enough to raise the total population to a maximum over one hundred sixty million persons. Students of population trends have been concerned over this diminution of lives.

The importance of maintaining the population could hardly find more masterful explanation than is offered by Frederick Osborn in "Preface to Eugenics" (Harper & Bros., New York). He writes: "A national population policy will develop out of several needs . . . the need to prevent a rapid decline in numbers, with an accompanying injury to economic stability and national morale . . . the need to maintain the gross number of people near the point which may be considered the 'optimum' for economic and social welfare and national security . . . the need to attain within this 'optimum' a distribution of births which is socially advantageous."

Osborn finds the motivation for the volume in the social advantage which will accrue to the nation through a sound eugenics program. While college graduates produce barely half enough children to replace themselves, those who have not completed the seventh grade beget almost enough children to keep the population numerically constant.

The environment and the educational opportunities

must be improved in order to allow the fruition of inherent potentialities. Osborn indicates the method. He points out that the various parts of the social security program already mark a beginning. It must be enlarged upon through a degree of selectivity in the acquisition of large families, through the provision of definite financial subsidy, through an enlarged and more informing educational curriculum, through the provision of decent opportunities for a larger section of the population. He insists that the ideals to cherish are "ideals of economic welfare broadly distributed among all the people; ideals of public health, of widely diffused education, of personal security and of personal freedom of action and thought."

All physicians may not embrace all that the author advocates but, since all share the author's social consciousness, they will find his volume intensely provocative, discerning in approach and not too didactic for the most conservative. B. Y. G.

## BOOK REVIEWS

**CLINICAL PELLEGRA.** By Seale Harris, M.D., Professor Emeritus of Medicine, University of Alabama, Birmingham, Alabama. Assisted by Seale Harris, Jr., M.D., Formerly Assistant Professor of Medicine, Vanderbilt University, Birmingham, Alabama. With a Foreword by E. V. McCollum, Ph.D., Sc.D., LL.D., Professor of Biochemistry, School of Hygiene and Public Health, The Johns Hopkins University, Baltimore, Maryland. Illustrated. St. Louis: The C. V. Mosby Company. 1941. Price \$7.00.

Vitamins have become important to everyone interested in medical practice. The advances in the knowledge of the vitamins have been so rapid that even the research worker in the field cannot keep up. It is important, then, that frequent works be available which condense and evaluate vitamin studies and correlate them with clinical disease. Such a book is Harris' "Clinical Pellegra." It traces the long history of this disease through the various theories of causation to the present concepts.

The book points out discrepancies and conflicts in theories which still exist. The illustrations in colors are beautifully done. The contributions from Duke and Georgia universities, as well as the chapter on pellegra in childhood, do much to enhance the reference value of the work. The bibliography, while admittedly incomplete, is sufficiently extensive to give the student of this disease a satisfactory review of the literature.

The reviewer recommends this book to the profession. R. O. M.

**BIOCHEMISTRY OF DISEASE.** By Meyer Bodansky, Ph.D., M.D., Director of the John Sealy Memorial Laboratory and Professor of Pathological Chemistry, University of Texas School of Medicine, and Oscar Bodansky, Ph.D., M.D., Lecturer in Biochemistry, Graduate Division, Brooklyn College, etc. New York: The Macmillan Company. 1940. Price \$8.00.

This book affords the practicing physician a systematic presentation of the biochemical aspects of the various diseases. Most physicians receive the major portion of their biochemical training early in medical school. By the time they have begun to practice they are so interested and occupied with the clinical aspects of disease that they have little time to review the necessary biochemical and physiological principles.

The authors have confined the book to a discussion of the biochemistry and physiology of diseases. Each chapter discusses one branch of medicine, for example,

diseases of the blood, diseases of the heart, diseases of the adrenals and disorders of nutrition are each confined to one chapter, and their various pathologic states are discussed from a biochemical standpoint.

Descriptions of laboratory methods are, for the most part, excluded. The authors have made a special attempt to discuss the biochemistry of diseases in accordance with their clinical significance. The chapters on vitamins and the liver and biliary tract are especially complete and contain discussions of the recent research in these fields. A substantial bibliography is supplied at the end of each chapter so that the reader may readily refer to original work.

This book affords an aid to the physician who is interested in the important aspect biochemistry plays in the practice and science of medicine. M. B. K.

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**SURGICAL PATHOLOGY OF THE DISEASES OF THE MOUTH AND JAWS.** By Arthur E. Hertzler, M.D., Surgeon to the Agnes Hertzler Memorial Hospital, Halstead, Kansas, Professor of Surgery, University of Kansas. Two hundred and six illustrations. Philadelphia: J. B. Lippincott Company. 1939. Price \$5.00.

This excellent volume of 208 pages again reflects the pleasant style of subject presentation by this popular author. He has divided this field of diseased conditions into twelve logical chapters, some anatomical and others clinical or pathological in their significance.

The descriptions of the various diseases are concise, accurate from the clinician's viewpoint and confirmed by the usual laboratory, microscopic or other tests. Subtle humor often is interspersed in the text to emphasize forcibly a point of importance. He has certainly taken the dryness out of an usually arid subject, so well that it is read with pleasure and recreation rather than as a cold professional duty.

The broad experience of the author has enabled him to illustrate most of the several hundred diseased conditions of the mouth and jaws he describes with such clear photographs of the actual diseases themselves that the general practitioner would find them valuable as a diagnostic guide.

He states that his object was to present the most frequent lesions seen in his vicinity, and that he made no effort to write a *vade mecum* of his subject. Nevertheless the work serves well as an atlas of the more common and some rarely occurring diseases of the mouth and jaws having a surgical interest.

Terse comment on the majority of the cases shown or described, as to the treatment given, the reasons therefor, and the outcome as well is valuable. This feature is not found in the average book on pathology of various regions. It adds much to the book's value as a diagnostic, clinical and outline treatment guide to any physician who has occasion to see or treat surgical diseases of the oral cavity or its contiguous structures. I consider it one of his best books. C. F. S.

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**THE BACTERIOLOGY OF PUBLIC HEALTH.** By George M. Cameron, Ph.D., Associate Professor of Bacteriology, University of Tennessee. Illustrated. St. Louis: The C. V. Mosby Company. 1940.

While this book is less inclusive than the usual bacteriology text, it includes material on immunity, protozoa and fungi. It is written from a public health standpoint. The book is divided on the basis of diseases or groups of diseases rather than on bacterial classification and gives a brief description of each disease in connection with its bacteriology. There are no separate sections on antiseptics, sterilization or cultural methods.

The omission of detailed laboratory technic makes

the book much more readable. To one who has studied bacteriology some time previously or even only a few years ago an account of the present day knowledge of bacteriology is quite interesting.

Some material which has not been generally accepted is included and seems out of place in a textbook of this size. This is most evident in the discussion of the trichomonads. The author emphasized the claims advancing streptococcus cardioarthritis as a cause of rheumatic fever. He wishes to include rheumatic fever in the group of acute infectious arthritis. He mentions work advancing the streptococci as the cause of osteoarthritis, apparently in preference to other suggested etiologic agents or processes.

The author sometimes mentions pathologic terms with a slightly different connotation than is generally used as he mentions *Treponema pallidum* as one cause of "non-epidemic cerebro-spinal meningitis."

D. J. S.

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**OBSTETRICS AND GYNECOLOGY.** By the Departmental Staff of the University of Chicago and Other Contributors. Edited by Fred L. Adair, M.A., M.D., F.A.C.S., Mary Campau Ryerson Professor and Chairman of the Department of Obstetrics and Gynecology in the University of Chicago, Chief of Service, the Chicago Lying-In Hospital, Chicago, Illinois. Illustrated with 359 Engravings and Fourteen Plates. Volumes I and II. Philadelphia: Lea & Febiger. 1940. Price \$20.00.

This work is another of the, now, many textbooks on obstetrics and gynecology. It differs from the usual texts in that an attempt has been made to integrate more closely the subject of female diseases and the function of reproduction.

The authors have intended to present the educational essentials rather than comprehensive details. They feel that "this type of instruction will lay a foundation upon which a more extensive individual knowledge may be built." The authors feel that a closer relationship between obstetrics and gynecology on the one hand and the basic sciences and general medicine on the other should be established. They have tried to show this relationship. Since obstetrics is considered of the major importance by the authors, a larger part of the text is devoted to this branch of the specialty. The authors hope that the reader not only will see the relationship between the practitioner and patient but will realize the social and economic importance of human reproduction in its many aspects.

This work has been designed not as a reference but for the medical student and the practitioner. The authors stress that the text is not necessarily the work of an individual but rather the combined opinion of a group, which means, for the most part, the members of the staff of gynecology and obstetrics in the University of Chicago and the Chicago Lying-In Hospital.

Space will not permit a detailed review of this excellent work. One must study the material carefully to appreciate what the authors have accomplished. The print is good and this together with the simplicity of phraseology makes reading the text a delight. The many engravings and plates are exceptionally clear and enhance even further the textual information. The chapter on "Physical Examination: General, Obstetric and Gynecologic" is particularly well done.

Adair and his cocontributors have produced an excellent textbook on obstetrics and gynecology. The authors have not, I believe, produced a text for the elementary student although that is one of their aims. One cannot expect an individual making his first acquaintanceship with obstetrics and gynecology to assimilate and digest as much material as is presented in these volumes. I do feel, however, that anyone practicing or teaching obstetrics and gynecology should by all means have this work in his library. J. G. J.

# THE JOURNAL

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### CHRONIC CERVICITIS

GEORGE F. PENDLETON, M.D.

KANSAS CITY, MO.

I intend to discuss the chronically infected cervix in my own way, as I see it and its ravages, as I see it treated and the results obtained and as I see the etiology.

The last hundred patients with chronic inflammatory disease who have left my gynecological clinic and been operated upon by other men offer some interesting data. Eighty-two of them have returned to my clinic with approximately the same symptoms plus some extra complaints.

If I were operated upon, after a certain period of convalescence, I would expect to go back to my work and be free from the need of medical services. In a study of one hundred appendectomies, ninety-seven of the patients reached this ideal, whereas, in my hundred gynecological cases only eighteen reached the ideal results.

Sixty-six of the hundred clinic patients entered the operating room with various grades of chronic

On the other hand, I have refused one hundred other patients with pelvic inflammation who superficially needed abdominal operation and were seemingly similar to the first series of a hundred. I refused these operations because I could not see the value of sending the patients through major operative procedures if they were to reappear in my clinic with the same old complaints plus a few new ones. In these cases at frequent intervals I have opened all visible cysts and hunted for hidden ones high up in the cervical canal. Regardless of the length of time and the number of visits, I kept at this type of treatment until the cervix shriveled in size and no more cysts appeared. Frequently the patient has responded with a greatly improved condition and the large, boggy, tender uterus has decreased in size and tenderness. Finally, I generally cauterized the endocervix with a hot needle, with or without radial cuts, always being careful to destroy the endocervix on the everted cervix.

Forty-six of these hundred patients have been relieved enough from major symptoms of pain so that I have hopes of no future operations. Thirty-

Table 1. *Series of 100 Cases Operated Upon*

Cases operated upon	100
Returned with major symptoms	82
Unknown results	18
Cases with chronic cervicitis	66
1. First cervical treatment at time of abdominal operation	45
Returned with symptoms	31
2. No cervical operation at time of abdominal operation	21
Returned with symptoms	19

cystic cervicitis and forty-five of these had their first cervical treatment at the same time that they had their abdominal incisions. Thirty-one of these forty-five patients have returned to my clinic with symptoms. Of the twenty-one patients who did not have cervical operations, nineteen returned still having major symptoms. These results certainly vary far from the ideal.

Presented before a joint meeting of the Chicago Gynecological Society, the Kansas City Obstetrical and Gynecological Society and the St. Louis Gynecological Society, St. Louis, February 15, 1941.

Table 2. *Series of 100 Cases Not Operated Upon*

Conservative treatment	100
Major symptoms gone	46
Marked reduction of backache	35
Marked decrease in adnexa size	52
Evidence of cystic ovary	22
Vastly improved	16
Very resistant cases	36
Relieved by Elliott tr.	7
Well enough to remarry	3
Bad cases to date	26
Do some housework	92
Do all their housework	81

five of them have had a marked reduction in lumbosacral and sacral backache although orthopedists insist that there is no such thing as a backache of gynecological origin. Fifty-two of these cases have had enough relief from abdominal pain from chronic adnexal inflammation to urge me to further schemes of palliative treatment.

Twenty-two of these patients had at least one ovary which was large, fluctuating and painful to palpation and a mass large enough to suggest the

need of surgical removal. After these treatments sixteen of them are improved so much that I make the postulation that the relief from chronic infection and swelling has been enough to allow the proper endocrine functions to approach a normal action.

Thirty-six of these patients have been resistant to treatment, but seven of them responded nicely under the Elliott heat treatment. The remaining twenty-nine are still in a pitiful condition. However, three of them have felt well enough to remarry.

Although I still have these hundred cases under observation and some sort of treatment, none has had major operation. Ninety-two of them do some of their own housework and eighty-one of them do all of their housework including washing and ironing.

In the one hundred operative cases, sixty-eight do not know who operated upon them beyond the

Table 3. *Data on 100 Cases Operated Upon*

Cases operated upon	100
Do not know who operated	68
Surgeon never postexamined	80
Cannot tell what was done	73
Cannot do all their housework	72

name of the intern, eighty of them have never been interviewed or examined by their surgeon, seventy-three of them do not know what operations were performed and, lastly, seventy-two of them cannot do all their own housework.

Surely this condition as it presents itself in Kansas City suggests that the cervix can play an important role in the inflammatory diseases of the female pelvis. It certainly suggests that the chronically infected cervix is of the same order of magnitude as the chronically infected tonsil, tooth or gallbladder. It also suggests to me that the usual method of cervical cautery and burning out each cervical cyst at the time of the abdominal operation, without previous cervical treatment and preparation, is not as good treatment as giving the cervix long preliminary preparation prior to the abdominal operation.

In my own clinic I have a record of fifty cases of a similar nature wherein the cervix received long preliminary treatment before the abdominal operation. There were five who returned occasionally for a period of two years. The other forty-five seemed to be reasonably cured.

I realize that it is difficult to judge two series of cases of pelvic inflammatory disease and consider them as having equal medical conditions, yet this is the third time that I have made a similar comparison of cases and each time the results have been about the same. I cite these facts to insist that chronic cystic cervicitis plays an important role in the pelvic condition of women. I insist that it is improper to seal up chronic cervicitis and chronic metritis by cauterizing the cervix only at

the major operation. I believe that preliminary cervical preparation reduces the chronic irritation within the cervix and often even the metritis within the uterus. If my viewpoint and experience can be trusted, the etiology of cervicitis becomes an item of major importance.

A careful genito-urinary specialist recently remarked that sulfanilamide has practically removed the treatment of gonorrhea in the male from the hands of the specialist. In my practice I have never observed a proven or suspected chronic gonococcus infected cervix which improved one iota by the use of sulfanilamide; nor have I observed any improvement in proven gonococcus inflammations of Skeen's ducts or Bartholin glands. I do believe that acute salpingitis of gonococcus origin is improved markedly by this drug, while the chronic salpingitis is improved only occasionally.

Although gonorrhea plays a part in the etiology of cervicitis, the greatest causative factor is probably labor. It is quite a feat to dilate a tiny opening to a 10 cm. diameter and then quickly shrivel that same opening back to the size of a straw without creating lacerations or chronic inflammatory results. It is even more difficult to do this with tissue which is highly populated with numerous glands highly activated by the endocrines in pregnancy. The gynecologic clinic vividly shows this real difficulty by the large number of battle-scarred cervixes. I do not intend to go into detail about these cervixes but I do wish to point out some common facts.

1. Cervical lacerations appear in the lateral aspects of the external os. A laceration on the anterior or posterior lip is rare enough to arouse medical interest immediately and practically always can be traced to a former surgical procedure.

2. The small nicks and slight lacerations so visible in the multipara are often insignificant and rarely cause pelvic inflammation while the larger lacerations frequently are associated with pelvic inflammation.

3. Old cervical lacerations often can be identified as grooves starting at the visible external os and extending upward even beyond vision and palpation and these lacerations often accompany infected adnexal complaints.

4. Even moderate lacerations upon healing leave an open external os. The process of uneven involution causes an eversion of the endocervix which, even when uninfected in the labor or puerperium, will rub against the posterior wall of the vagina and finally become infected, from which process may spring the causative factors of chronic cervicitis, chronic metritis and even adnexial infections. In 3,700 consecutive deliveries, it was necessary for me to treat 840 cervixes.

Surely with this array of facts, it is fair to assume that the cervical laceration which occurs at the time of labor is an important factor in the future health of the woman. Some seem to escape the

damaging ravages of this condition while others feel the full force of its existence. Gonorrhea plays a part as a causative factor but not as big a role as streptococcus, staphylococcus and colon bacillus which infect fresh lacerations or subsequently infect an everted irritated endocervix. If these cervical lacerations are so highly important, it behooves each one to consider the laceration at its incipency.

This certainly brings up the pertinent question of immediate cervical repairs. I see no evident reason why specialists should not observe and repair lacerated cervixes immediately after labor. The old bugaboos of hemorrhage and shock from pulling on the uterine ligaments should not be serious in the hands of competent men. On the other hand, the same procedures under less experienced control might result in serious sequelae. Certainly, immediate closure of a portal of entry is an important factor. Mechanical exposure is not difficult to one who knows that he must remove the placenta first in order to get the best mechanical position for inspection and repair of the cervix.

The old argument that one gets as many postpartum elevated temperatures after such repairs as when the cervix is not repaired is no argument at all for elevated temperatures do not indicate all the pelvic infections. The patient without postpartum temperature may be the biggest "problem" of the year.

By all the reasoning of bacteriology and pathology, immediate inspection and repair should be a routine procedure except in unusual cases and, when it is not done, one displays negligence or a lack of trust in those on his staff who would like to do it. The patient under the care of a specialist expects ultra careful consideration, which she should receive. What I demand in the specialist, however, I do not expect from the general practitioner with whom the same procedures occasionally will result in serious damage.

While I wish to emphasize the importance of the cervical laceration in relation to the future health of a woman, the actual reason for my discussion is that I wish to point out the direct cause of cervical lacerations, how they can be foretold and, having predicted them, what one can do to minimize or intensify the tear.

I studied the following details for ten years before I ever mentioned the subject. About six years ago, I gave a short lecture about it and since then I have warned my house physicians about it. I am now just as confident of it as I was fifteen years ago so I pass it on. All have been led to believe that a cervix dilating in its proper way finally reaches a point close to full dilation and then the succeeding uterine contraction forces the head against this muscular ring which lacerates rather than dilates. This condition is no doubt correct in a perfectly balanced labor and the laceration of the cervix which results is of minor nature. How then shall one explain those long far-reaching tears?

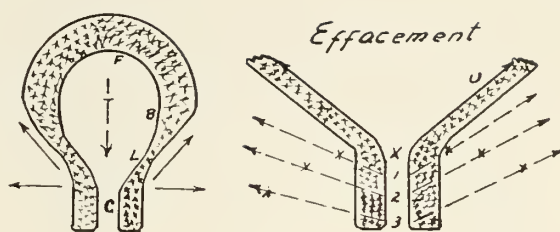


Fig. 1.

Are the deep ruptures the result of poor cervical tissue? If that is so, why are they always to the right or the left of the cervix? Why does the cervix split at the lateral sides rather than anteriorly or posteriorly?

It is my postulation that many if not most deep lacerations of the cervix are the result of abnormal mechanics during labor. It is my contention that some of these can be prevented. I intend to show a physical explanation that the predestined cervical laceration receives its impetus early in labor and as labor advances the cervix weakens at the inevitable spot which finally ruptures. By my explanation I hope to confirm that one should watch the early labor with as much care as is bestowed upon its ending; that one should pick the analgesia with forethought and expect more from it than the relief of pain.

The figure of effacement shows a schematic drawing of the human uterus with its cervical canal C, lower uterine segment L, physiological Bandl Ring B and the fundus F. To the right is a schematic cross section of a cervix during labor and in the process of effacement. Under the strain of uterine contractions the lower uterine segment walls U are pulled upward and outward and the internal os whose edge is marked X gradually and equally dilates. As this os dilates, the cervical canal shortens and the original point X progresses outward and upward along the wall of the cervical canal. During this process palpation or vision through the vagina would show a cervix centrally placed in the pelvis with equal thickness around its periphery. At almost full dilation a thin cervi-

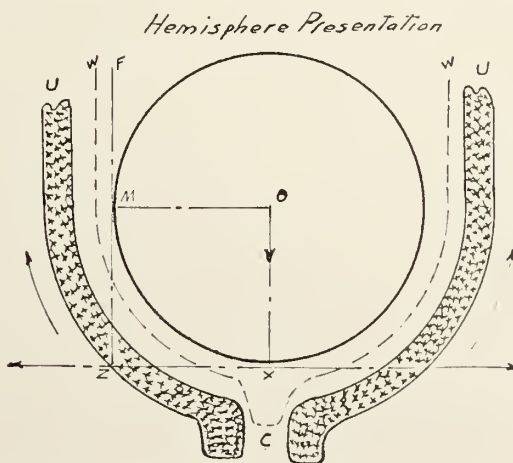


Fig. 2.



tion unless one or both sides of the cervix have been weakened in earlier labor. Many of the deep cervical lacerations which occur after podalic version are really not caused primarily by the version but by the delayed ovoid presentation which finally forces the version procedure, having already badly weakened the cervical structure.

During the last few years many physicians are again advocating the cautious use of pituitary solution in labors that progress too slowly. I have repeatedly criticized this idea. I have already pointed out the cost in baby lives. I have publically accused these men of throwing out a smoke screen to hide the real truth that they are tired of the long drawn-out labor and want to hurry it along for their own benefit rather than for the patient's ultimate good. Slow labors are dystochias. If the cervix will not dilate normally, the mechanics of labor are at fault and the trouble should not be blamed on a rigid os. Misplaced positions and ovoid presentations head the list of causes. The cervix shouts its troubles to unobserving doctors. It presents itself with thick anterior and posterior lips and with thin sides. To those who will examine and reason it is clearly indicating the abnormal stresses and pulls, the unequal, irregular, lopsided bombardment of uterine contractions around an ovoid presentation. Yet these men want to whip up the tempo of the labor and, disregarding the weakened cervix, force wider and deeper lacerations. They judge their results by temperatures and early postpartum examinations. If they do not produce maternal deaths, they are satisfied.

Follow these cases in the gynecological clinic as I have done. Check up their pituitary solution history. Observe the deep cervical lacerations and the wide prominent grooves along the lateral aspects of the cervix reaching far upward into the broad ligaments. Tabulate the number of rigid tender broad ligaments. Notice the large number of chronically infected everted cystic cervixes. Check up on the numerous chronic metritis cases, and then stop and think. That is all I ask of you; just stop and think. I thoroughly and honestly believe that pituitary solution given to cases with ovoid presentations with weakened cervixes is a vile trick perpetrated upon a trusting patient.

#### CONCLUSIONS

Perfect hemisphere presentations of the fetal head result in good cervical involution while minor degrees of head extension and asynclitism cause ovoid presentations which too often result in deep cervical tears.

Ovoid presentations cause a greater dilation on one or both sides of the cervix and result in early weakness and thinness at those sites which split at final dilation and leave deep lacerations.

Ovoid presentations cannot be diagnosed in early labor but they should be suspected and an attempt made to correct them or to diminish their dangerous sequelae.

Analgesias should not be selected on the basis of pain reduction only. They should be varied to suit the purpose of decreasing amplitude and increasing the interval between uterine contractions as well as insuring fetal safety.

Cervicitis can be a dangerous disease leaving a trail of pitiful, incapacitated, human wrecks.

933 Professional Building.

## THE VAGOHYPOTONIC INDIVIDUAL

A PRELIMINARY REPORT

DAN G. STINE, M.D.

COLUMBIA, MO.

In November 1938 I described a new cardiac function test.<sup>35</sup> In applying this test to the athletes at the University of Missouri it was found that three types of individuals gave abnormal responses: first, individuals with poorly compensated valvular defects; second, individuals in whom the conductivity of the heart's muscle had been impaired by disease, and third, vagohypotonic individuals, that is, those who did not have normal vagus inhibitory control of the circulatory apparatus and hence did not have a normal resting cardiac rate and were unable to maintain the normal working cardiac rate. This was described in the previous article.<sup>35</sup>

The term "vagohypotonia" was used to designate individuals who showed this seeming lack of vagus control of the heart rate. It does not explain other departures from the normal in these individuals with disturbed autonomic nervous systems as there are usually many more symptoms referable to vagotonia than to vagohypotonia such as flushing, sweating, spastic colon, and frequency of winking, while the symptoms of tachycardia and hypertension would point to sympathicotonia. A grouping of symptoms, pointing to vagotonia or sympathicotonia, has been determined experimentally by the antagonistic reaction of nervous tissues excited by the action of drugs as the two nervous systems tend to maintain a stimulative and depressive physiological control in the normal individual under normal conditions. Even investigators carrying out these pharmacodynamic studies were puzzled by the conflicting and overlapping responses they obtained.

Wolfsohn says: "The subject of vagotonic and sympathicotonic states is still in its infancy and the sharp lines drawn by the originator of this conception will in time be so modified that a clearer conception of disease entities due to disturbance of the vegetative nervous system will be ferreted out." Wiggers says: "Indeed some clinicians following the lead of Eppinger and Hess recognize vagotonia and sympathicotonia as definite clinical syndromes. While functional disturbances explain-

From the Student Health Service, University of Missouri.  
Read before the New Mexico State Medical Society, Albuquerque, New Mexico, May 28, 1940.

able by an autonomic imbalance are commonly met with, the evidence is less secure that one or the other system is solely involved, hence, the use of these terms should be discouraged."

Interest in the vagohypotonic individual carried me out of the field of athletes, where most of the work had been done, to the average student. I found that the vagohypotonic individual was one of a large group in the student body, making up 11.8 per cent of the total.

Carrying the search outside of the student body, I found that this condition appeared to have a family tendency and appeared at as early an age as 12 years and, where there was not a hereditary influence, under certain conditions, it could appear later in life. It has been known to appear after surgical operations, after severe infections, with thyrotoxicosis and after periods of severe or long-continued mental stress. Students sometimes seem to develop a temporary period of vagohypotonia following examination week.

The cardiac function test was applied to forty-eight patients varying in ages from 42 to 67 who showed evidence of early arterial hypertension. All these individuals gave poor results in the cardiac function test, corresponding to those obtained in the tests given to the vagohypotonic students.

The most intriguing result of the investigation was that it was found that all the youthful, arterial hypertensive patients under observation in the Student Health Service of the University of Missouri were a part of this group of vagohypotonic individuals.

The question arose whether this group of individuals which included all the youthful hypertensive patients in the student body did not have other mental and physical qualities to set them apart from the average student and, if so, was there not some mental or physical factor that would help in the identification of these individuals, although they may have a normal blood pressure, so that they could be helped to avoid a hypertensive breakdown later in life.

Table 1. *Items of Personality in Which Normal Students and Hypertension Patients Show Differences (McKinney)*

	Hypertension (16 cases)	Normal (21 cases)
Grades both semesters:		
Per cent "I" (3 hours or more) ..	37.5	24
Per cent "F" .....	0	12
Average hours per day of study (1938-40 group) .....	4	3.2
Per cent following a schedule in their process of study .....	25	4
Per cent having daily habits of study .....	37.5	28
Per cent seeking a quiet place to study .....	69	52
Per cent actively trying to improve in their abilities and achieve- ments .....	87.5	52
Average weight, pounds .....	161	145
Average height .....	5' 10½"	5' 7"
Per cent of students who hardly think of health .....	62.5	52
Number of extracurricular activi- ties per student .....	1.5	2.3
Total hours spent at dances (per week) .....	12	37

Total hours student feels he has wasted per week .....	218	162
Total dates per month .....	65	170
Reasons for coming to college:		
Better employment, per cent ....	43.75	52
Definite career, per cent .....	93.75	52
General culture, per cent .....	31.25	66
Student's opinion of his outstanding assets:		
Appearance, per cent .....	6.25	47
High intelligence, per cent .....	37.5	28
(Some modified this by crossing out the word "high")		
Reputation, per cent .....	56.25	28
Car, per cent .....	18.75	4
Fraternity affiliations, per cent	18.75	4
Per cent saying that their present living conditions are inspiring	62.5	4
Working conditions:		
Per cent saying work is interesting	50.0	19
Per cent saying work is fatiguing	18.75	4
Per cent saying work is instructive	25.0	14
Per cent saying work is too con- suming of time .....	12.5	9
On a scale 0 to 10, the mental in- tegration consisting of oneness of purposes, and consistency and stability of attitudes and desires, "M" equals .....	7.26	5.3
Percentage of students saying they "felt tired most of the time"	18.75	14
Financial status:		
Insufficient .....	12.5	19
Sufficient .....	37.5	38
Average .....	50.0	38
Above average .....	00.0	4
Students indicated the following traits as being descriptive of their personality:		
Overconscientious .....	37.5	15
Restless .....	69.75	35
Nervous .....	56.25	20
Unemotional .....	00.00	15
Persistent .....	50.0	20
Calm .....	25.0	45
Sociable .....	43.75	65
Sensitive .....	43.75	10
Cynical .....	18.75	30
Egocentric .....	00.00	15
Self-conscious .....	37.5	25
Easily hurt .....	25.0	5
Anxious .....	12.5	30
Tolerant .....	31.25	55
Hard worker .....	75.00	15
Original .....	37.5	15
Shy .....	43.75	5
Lazy .....	12.25	25
Often procrastinate .....	6.25	30
Aggressive .....	37.5	35
Good teamworker .....	69.75	50
Leader .....	37.5	60
Individualist .....	31.25	20
Too serious .....	56.25	25
Reliable .....	75.0	20
Moody .....	25.0	15
Easily distracted .....	18.75	45
Dependable .....	69.75	50
Forceful .....	25.0	10
Stubborn .....	25.0	20
Critical .....	6.25	45
Often lonely .....	18.75	0
Easily discouraged .....	6.25	20
Jealous .....	00.00	15

In comparing the vagohypotonic group with the much larger group of normal students it was found that the vagohypotonic student was taller and heavier than the average of the nonvagohypotonic students and was better developed muscularly; however, he showed much more muscular tenseness and inability to relax muscularly with rest. Mentally, he was a good student; he took life seriously and was less prone to go to others for advice and he was rare as a patient in the Personality Adjustment Clinic of the Student Health Service.\*

It was decided to study the twenty-four youth-

\*I want to express my thanks for the assistance of Dr. Fred McKinney, Psychologist in the Student Health Service, in this work.

Table 2. *Students Under Observation on Account of Arterial Hypertension*

Case	Blood Pressure at Rest	Emotional Response	Cold Pressor Test	Heritage	Basal Metabolic Rate	Function Test	Heart Size in cc.	Remarks
1	140/90	170/95	160/95	Father	+4.0	Poor	+0.5	Hypertension for several years. Self-supporting. Cooks own meals. Lives in basement room. Good student.
2	158/92	175/95	190/100	Both	-5.0	Bad	+1	Reacts too promptly to suggestion. Self-supporting. Good student.
3	148/64	170/90	168/100	Mother	+1.1	Bad	0.1	History of "cardiac palpitation." Mentally slow but is a fair student. Works for meals. Is very ambitious.
4	148/80	168/90	148/70	Father	+1.3	Poor	+1.6	Entered school with hypertension. Self-supporting. Good student.
5	144/80	164/80	140/90		0	Poor	+0.1	Lives with parents on farm. Father is disabled veteran. Works at home. Good student.
6	150/84	174/90	158/100	Mother	-2.0	Bad	+0.5	Well fixed financially. Ambitious but repressed.
7	145/90	165/100	168/100	Both	0	Poor	+1.2	Self-supporting. Good student. Says he has "hot flashes."
8	148/88	158/90	160/95		-1.0	Poor	+1.1	Complains of dizziness and pulsation in head.
9	142/90	170/100	142/100		0	Poor	0	In four extracurricular activities. Very ambitious. Good student. Works in summer vacation.
10	145/95	170/100	158/105	Mother	+5	Bad	0.9	Self-supporting. Complains of "cardiac palpitation."
11	150/80	170/80	150/90	Father	0	Poor	-1.3	Farmer. Wife works in factory. One child.
12	170/80	190/90	186/80	Father	-2	Poor	-0.9	"Plenty of money." No worries.
13	148/80	170/90	190/110	Father	-1	Poor	+0.8	Self-supporting. Very ambitious. Good student.
14	150/70	175/70	155/92		+4	Poor	-0.4	Partially supports self. Eats two meals a day.
15	160/90	180/90	160/90	Mother	+1	Poor	-0.8	Works for meals. Very introspective and neurotic.
16	148/70	160/70	160/70	Mother	+8	Poor	-0.1	Self-supporting. Farmer boy used to hard work.
17	150/90	160/90	162/100	Father	+5	Poor	-0.8	Partially self-supporting. Graduate assistant. Is very ambitious. Good student.
18	170/60	200/70	192/75	Father	+1.5	Bad	+1.0	Partially self-supporting. Very ambitious. Good student.
19	152/82	180/90	178/100	Father	+7.7	Bad	+0.5	"Plenty of money." Socially a success but disappointed in not getting into athletics.
20	140/60	155/90	142/75	Father	0	Poor	-0.7	"Plenty of money."
21	145/70	170/70	170/100	Father	+0.8	Poor	-0.7	Self-supporting. Cooks own meals.
22	148/80	160/90	153/90		-1	Poor	0	"Plenty of money." Amateur actor. Very ambitious. Good student.
23	150/70	160/75	160/90	Both	-4.5	Poor	+0.4	Partially self-supporting. Cooks own meals.
24	140/70	170/85	156/90	Both	-5	Bad	+1.6	Self-supporting. Has taught school.

No evidence of visceral damage. Evidence sought for by a complete physical examination including blood and urine chemistry.

Blood pressure at rest taken in a basal state.

All patients showed tense muscles; flushing and sweating shown by patients 1, 2, 3, 6, 7, 9, 10, 12, 13, 14, 17, 18, 19, 21, 22, 24; flushing by patients 4, 8; sweating by patients 11, 15, 20; fainting by patients 1, 10, 13, 14, 19; tachycardia by patients 2, 8, 10; sinus arrhythmia by 3, 6, 15; tremor by 4; spastic colon by 10; hands and feet cyanotic by 11; stuttering by 12; feels own pulse by 15.

Electrocardiogram showed tachycardia in patients 10, 13, 14, 20 and 24; sinus arrhythmia in 11. All others were normal.

All students are under treatment in the Personality Adjustment Clinic of the University. Sixteen per cent have shown improvement.

Examination of 6,977 students showed an average blood pressure of 121 systolic and 71 diastolic.

ful, nonathletic, hypertensive students and an equal number of youthful vagohypotonic individuals with normal blood pressure levels, picked by the cardiac function test, to see the response to emotional disturbances and to the cold pressor test. A control group of an equal number giving a normal cardiac function test was subjected to the same tests.

The hypertensive and the vagohypotonic individuals without hypertension gave exaggerated blood pressure reactions to emotional stimuli. The normal controls gave slight or no blood pressure reactions to emotional stimuli. The cold pressor test caused a more marked blood pressure reaction in the hypertensive-vagohypotonic group than in the nonhypertensive-vagohypotonic group or in the normal group, but there was nothing consistent in these findings. However, the middle aged group with early arterial hypertension gave a much more exaggerated blood pressure reaction to the cold pressor test.

The striking findings in the hypertensive patients were: (1) family history of hypertension in the immediate family in all but five while six nonhypertensive-vagohypotonic individuals gave a family history of hypertension and no controls gave such a family history; (2) the superabundance of males showing hypertension, there being just one female in the twenty-four, and (3) the number of students that were self-supporting in whole or in part and,

probably as part of the same picture, the number that had harassing personal problems.

Doctor McKinney summarized their mental attitude as follows: "Twenty-one normal college students and sixteen students diagnosed as having hypertension were compared in respect to several hundred items describing their present behavior and past history. The following generalization can be made regarding the manner in which they differed in respect to these traits:

"The hypertensive group was much more conscientious about school work. They made better grades, studied more, had a more systematic plan of study and were more intent upon improvement. As a result they participated less in extracurricular activities, had fewer dates and went to fewer dances. They seemed much more serious in attitude. They believed they wasted more time than normal students thought. The hypertensive students do more and better school work.

"Hypertensive students seem to feel more inferior than the typical student. They think their appearance is below average. They do think, however, that they are smarter. They seem to take minor matters in their environment more seriously than do the normal students. They comment on more trivial matters.

"Hypertensive students are more concerned about the impression their behavior makes on others. They say they are less well oriented to their

Table 3. *Vagohypotonic Students With Family History of Hypertension. (Under Observation for Three Years.)*

Case	Blood Pressure (1937)	Blood Pressure (1940)	Emotional Response	Cold Pressor Test	Heritage	Basal Metabolic Rate	Function Test	Remarks
1	110/70	110/60	110/60	100/75	Father	Not done	Poor	None
2	100/80	110/80	110/80	120/80	Father	Not done	Poor	None
3	120/70	120/70	120/70	120/80	Mother	Not done	Poor	None
4	120/60	120/60	120/60	125/70	Father	Not done	Poor	None
5	118/72	122/75	125/75	130/80	Both	Not done	Poor	Self-supporting. Has been drinking heavily.
6	120/60	120/60	120/60	132/70	Mother	Not done	Poor	None
7	118/60	120/60	120/60	130/70	Mother	Not done	Poor	Self supporting.
8	120/70	150/70	160/75	160/90	Both	-4.5	Poor	Self supporting. Cooks own meals.
9	120/70	148/80	170/90	190/110	Father	-1.0	Poor	Self-supporting. Works very hard. Very ambitious.
10	124/72	145/95	170/100	158/105	Mother	+5.0	Poor	Self-supporting. Works very hard. Good student.
11	128/84	148/88	158/90	160/95	Both	0	Bad	Good student. Self-supporting. One brother died of hypertension at 28 years. Another brother has hypertension.
12	124/80	150/80	174/90	158/100	Mother	-2.0	Bad	No financial worries. Is ambitious but feels repressed.

There was no evidence of visceral damage.

Electrocardiogram was normal in all patients except patient 10 who showed tachycardia.

Evidence of autonomic imbalance: none in patients 1, 2, 3, 4, 5, 6 and 7; tense muscles in patients 8, 9, 10, 11 and 12; flushing in patients 8, 9 and 11; sweating in patients 8, 9, 11 and 12; fainting and colonic spasm in patient 10; sinus arrhythmia in patient 12.

environment. They usually have a purpose but feel they are not reaching this purpose, another aspect of their overconscientiousness. When they are asked to describe their own personality, these characteristics stand out as distinguishing them from the normal: restlessness, overconscientiousness, nervousness, emotionalism, sensitiveness, loneliness and industriousness."

When this observation of vagohypotonic students was begun three years ago, I wondered if it was possible, by judging the vagohypotonic response to the cardiac function test in individuals with a family history of hypertension, to foretell whether these individuals would develop hypertension under the pressure of university life.

Twelve freshmen with definite family histories of arterial hypertension were selected. All gave marked vagohypotonic responses to the cardiac function test and all had normal blood pressure readings on entrance to the university. After three years, five of the twelve have developed arterial hypertension. This has been accompanied by a more exaggerated blood pressure reaction to emotion and by a slight but irregular increase in the response to the cold pressor test.

From this investigation, it would appear that vagohypotonia develops in a large group of individuals early in life and that this group probably becomes larger as age increases. This investigation would tend to show that individuals developing essential arterial hypertension belong to this group, and that how early in life they develop their essential arterial hypertension depends directly upon the family history of hypertension. It would tend to show also that when individuals give evidence of a family tendency to arterial hypertension and a vagohypotonic response to the cardiac function test, the development of essential arterial hypertension early in life can be foretold.

The vagohypotonic individual can be identified easily by the observance of his pulse rate at rest and at work, by his blood pressure response to emotion and, less accurately, his response to cold. He is large, well developed muscularly, flushes readily, sweats easily, his muscles at rest are tense, he is prone to attacks of tachycardia and spastic colon and winks frequently. Mentally, he seems to be a serious-minded perfectionist who has never learned to play; one who is probably overcompensating for some real or fancied personal handicap. If he has not developed arterial hypertension in early life, he is likely to in later life and he likely will transmit this tendency to his offspring.

I feel that this condition is a correctible one and that the four years of university life offer an opportunity to teach each vagohypotonic student to rationalize his personal problems, to teach him to work without developing nervous tension, which is reflected in his muscular tension, and, above all, to teach him to play and take his career as one of the enjoyable but not too serious episodes of his life.

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## THE IRRITABLE COLON

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The irritable colon is the gastrointestinal ailment the medical profession is called upon most frequently to treat and perhaps is the disease that attacks our highly civilized race most frequently. Large gastrointestinal clinics spend at least 60 per cent of their time diagnosing and treating this functional distress. Generally speaking, it receives the poorest care of any digestive disease because it is the least well understood, the most difficult to control and requires infinitely more time in the study and management of the individual's life and habits than does any other disease. Peptic ulcer and cholelithiasis are definite, but the irritable colon is at times as elusive as the food mythical old Tantalus tried for eons to capture.

The terminology applied to this condition is confusing both to the medical profession and to the laity. It has many different names as "mucous colitis," "spastic bowel," "spastic colitis," "chronic constipation," *ad infinitum*. I dislike any name which includes the word "colitis." The suffix "-itis" is reserved for inflammatory disease in all other instances, but "colitis" is used in the absence of any measure of true inflammation.

"Irritable colon" is the most widely accepted and by far the most accurately descriptive phrase, and by using it the patient often is aided materially in developing an understanding of the true nature of the disease. Without this understanding by the patient, the physician can do little therapeutically.

### ETIOLOGY

Irritable colon is frequently a manifestation of some much more serious condition in the body, the stomach and bowel being only the shock organs. There are few general illnesses which are unaccompanied by digestive upsets. In children, each of the acute fevers is ushered in by vomiting and diarrhea. Everyone has experienced the characteristic anorexia and mild nausea before school examinations and has recognized that the etiology is outside of the stomach itself; but frequently this possibility is overlooked in patients. Fright or apprehension commonly causes dryness of the mouth. Diarrhea is a not uncommon accompaniment of fear.

Today few succeed in business or a profession without "living it." The successful man takes his occupation to the dinner table with him, takes it to the concert and frequently works out knotty problems while wide eyed in bed at 2:00 or 3:00 a. m. This is civilization for which the human body was not designed. One of the commonest prices that is paid for this behavior is distress from an irritable colon. An outstanding example is the

manager of the chain store. His superiors urge him to keep up his sales and he in turn must force his assistants, often against his will, to function under terrific pressure. I have not seen one of these individuals who has stood the strain for three or four years without developing some measure of nervous indigestion. This type of nervous turmoil is caused by situations such as small arguments at home, worry over finances, domestic infidelity and two families under the same roof, all having the same effect on the overburdened digestive tract.

Alvarez<sup>1</sup> recently described a type of "storm" occurring in the medulla of these unstable individuals which may exist under the most stolid exterior, the patient himself being unaware of its existence. Frequently the physician is confronted with individuals who deride the conclusion that they have nervous indigestion with statements about their lack of nervousness and tendencies to fret and worry until the physician almost doubts his diagnoses. These stimuli are not strong enough for conscious perception but are easily felt by the sensitive colon.

Irritations often have their source in diet. If an individual has a mild lack of initial endowment, the irritation of a badly selected fare falls on fertile ground. This may be compensated for for months or even years until a seemingly insignificant indiscretion will upset the equilibrium and the unfortunate person suddenly reaps the benefits of his accumulated indiscretions.

Closely associated with the diet is the stimulation the bowel receives from the way in which people eat. Food is a stimulus to the digestive tract and the stomach and bowel are much more reactive to irritants when under this influence. Hurry, worry, arguments and physical discomfort at time of meals condition the flow of digestive juices to promote disturbances. Rapid eating is an American habit. The flow of digestive juices is a result of the stimulation by food, or pleasant anticipation of food, and if the food is eaten hurriedly, it fails this purpose and the stomach is not prepared for its reception. Thus surroundings at the dinner table, the state of mind at the time of eating and the time allowed for the meal are large as factors to be considered in this type of problem.

Tobacco has a stimulating effect on the motor functions of the alimentary tract, particularly in susceptible individuals. Although this has been borne out in the experimental laboratory, one needs only clinical observation to prove it. All physicians have had patients tell them of the prompt bowel movement which results from the first cigarette of the day; and many can recall the result of nicotine poisoning which came with the first smoke. Patients with irritable colons tolerate nicotine poorly and generally do better by avoiding it or at least curtailing the amount quite markedly.

Advertising is a potent factor. As long as the

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press and the radio are open to vendors of patent medicines, physicians will be well supplied with irritable colons to treat. Cathartics act by irritating, and for a patient to use them for relief of this type of distress is truly absurd.

#### PHYSIOLOGICAL DISTURBANCE

Spasm is the most frequent cause of distress in these patients. The spasm may occur in any part of the alimentary tract but the most common site is the colon, particularly the sigmoid. Spasm is, of course, the most common expression of irritability of smooth muscle and in hyperirritable states the normal peristaltic activity may stimulate severe enough spasm to require morphine for relief. It may be demonstrated in frequent instances that spasm alone is the cause of pain by the rather prompt relief obtained from nitroglycerin. It also may be noted that the administration of pitressin<sup>2</sup> for the removal of gas shadows in cholecystography will reproduce the patient's typical distress. Likewise, it is frequently possible to see the spasm through the proctoscope, and at these times patients will readily identify the distress as the type from which they are seeking relief.

When spasm occurs, distention often is found at a higher level. As a result patients frequently get actual abdominal distention. This type of distress is reproduced by the barium enema for colon roentgenography. The identification of the distress at the time of these various procedures is often of great diagnostic aid in the absence of organic disease.

Motility is generally somewhat disturbed. In many cases, in spite of areas of spasm and apparent hyperperistalsis, there is actual retardation of the time required to traverse the alimentary canal. In these patients the result generally is hard stools. However, a certain group will have definite diarrhea and others will alternate constipation with diarrhea as periods of spasm alternate with relaxation.

Ivy<sup>3</sup> has pointed out a close relation between the dynamics of the biliary tract and irritable or spastic states in the colon. This may throw some light on the cases of irritable colon in which the gall-bladder at first will fail to function, as determined by contrast roentgen studies, but will do so normally after a period of management for the bowel disturbance.

The gastrocolic reflex is a normal one but, in unstable colons, it may reach distressingly pathological proportions, the individual running for the toilet after the third mouthful of food.

The gastrointestinal tract is the first of the great bodily systems to become unstable because it is under the least nervous restraint. The circulatory and genito-urinary systems are under close nervous control, but not the digestive tract.

It is interesting to note in this connection the close association between disturbed neurocirculatory control (neurocirculatory asthenia) and dis-

turbed neurodigestive control (neurogenic irritable colon). These two situations frequently coexist and it is easy to draw a parallel between the symptomatology manifest in the two systems.

In addition to the various motor disturbances there are also secretory alterations in these patients. There is, in the presence of emotional disturbance and nervous tension, frequent suppression of salivary and gastric secretion. This certainly adds to the difficulty the asynchronous alimentary tract experiences in handling the normal food.

The excessive production of mucus in some of these patients is a manifestation merely of local irritation and hyperstimulation. There is no actual pathologic change but only increase in the protective production of mucus in response to irritation.

When the colon is stimulated beyond its ability to respond, resulting from excessive irritation or lowered resistance (avitaminosis), it, like all other muscle, relaxes and atony results.

Any combination of these disturbances is possible and although they may present widely varying clinical syndromes, they are all part of the same disease.

#### SYMPTOMATOLOGY

Unfortunately there is no typical symptom complex in this ailment. It can be considered that most gastrointestinal distress comes from disturbed function rather than from disturbed morphology. Thus, functional disease can reproduce any type of pain or distress which can be produced by organic disease. Pyloric dysfunction can reproduce ulcer-like distress and may be associated with much vomiting. The pain of cholelithiasis may in some instances be aped. All the various colonic disorders are simulated in one form or other.

Except for those who have reflex hyperacidity with ulcer-like distress, most of the patients feel worse with a full stomach and generally feel better after a change in intra-abdominal pressure such as after a bowel movement, expulsion of flatus or belching. Long histories of distress without remission are always suggestive of functional rather than organic disease. However, it is dangerous to attempt any elimination of organic disease without thorough examination.

#### DIAGNOSIS

The diagnosis of irritable colon is made only as a last resort. The etiology, absence of pathological condition and the functional disturbance may be obvious at first glance, but failure to look carefully for organic disease will allow some curable cancers or removable gall stones to be overlooked.

The symptoms of the irritable bowel come from spasm and distention. The irritants mentioned previously are not the sole cause of these disturbances in function. A cancer in the alimentary tract is an irritant. I recall in this connection a 45 year old man, obviously nervous, who had had recent

difficulty with his business and with his wife. He had had bloating and belching after meals and constipation and no other symptoms. Investigation was undertaken only to prove to him he had no organic disease. The roentgenographic studies showed a large medullary carcinoma of the stomach. Most physicians can recall instances of gall stones in normally functioning gallbladders, causing no colic but associated with much vague abdominal distress and some constipation. The symptoms are from the bowel, not the gallbladder, but enough irritation is caused by the gall stone to preclude complete relief of symptoms without surgery. Complete investigations should be carried out whenever possible.

Individuals with irritable bowel are generally pessimists and are frequently apprehensive concerning themselves. They go from practitioner to practitioner until someone examines them in a satisfactory manner. The disease is prone to recurrence and unless the physician is able to say without reservation that the disease is functional, doubt will exist in the patient's mind. When doubt is present, therapy is generally ineffectual.

Each case is an individual problem but it is necessary to attempt to generalize. Nearly all patients should have complete physical examinations, gastrointestinal roentgenograms (including stomach, gallbladder and barium enema), proctoscopic examination, gastric analysis and stool examination. Certain selected cases can be handled adequately with a less formidable array of diagnostic procedures. These will of necessity require much more painstaking work and analysis from a clinical standpoint.

#### MANAGEMENT

Having arrived at a diagnosis, one is faced with the problem of management. If this is a most difficult disease to diagnose, it is doubly difficult to treat. In many instances one is faced with a lack of initial endowment or an impossible environment. These patients must frequently be led like little children and the judgment and will of the physician must be imposed, sternly and without quarter, upon the life of each of them.

There are three main aspects of treatment: (1) management of the way of living, (2) diet, and (3) medicine. The rearrangement of hours of work, sleep and eating so that the patient lives a regular rhythmic life is essential. The arrhythmia which occurs in the alimentary tract is frequently impossible to correct in the presence of an arrhythmic way of living. The American habit of hurry must be abolished. A patient who persists in the practice of eating hurriedly is almost incurable.

The establishment of a regular time for going to stool is of infinite benefit, especially in cases of constipation. This must be done without laxatives and without mineral oil. It can be done in nearly all cases by the use of small enemas without soap at the regular time each day.

Heat is a potent agent for the relief of pain. A hot bath will often allay severe spasm and the electric pad should be a routine part of the prescription to each patient. One or two glasses of hot water containing a little soda or lemon juice taken on arising are frequently of benefit. Rest is essential. Eight hours of sleep is indispensable and additional rest during the day is highly desirable.

Regular daily physical exercise should be encouraged and even prescribed if necessary. If possible, this should be out of doors. Golf is the most satisfactory exercise with bowling perhaps next. Daily walks or horseback riding are also desirable. These will serve to aid general body tone as well as relax the tension of daily living.

The correction of all the etiological factors mentioned previously should be carried out if possible. It is generally quite difficult but one must at least set up an ideal for the patient to attempt to emulate.

The diet should have two characteristics. First, it should be free from all irritating foods. Bran in all forms should be avoided; all highly spiced and seasoned foods should be strictly prohibited and cooked fats (fried foods, fat meats, gravies) should not be included. Second, at the outset it should be low in residue. Fruit, vegetables and milk should be avoided at the start. Milk is not a low residue food and these patients tolerate it poorly. It should not be added to the diet until all distress has subsided and the patient can tolerate raw fruit and raw vegetables. However, the patient should be allowed cream and butter in liberal quantities from the first. The first addition after the initial period should be cooked fruits and vegetables. After several weeks on this schedule fruit juices are tried and, if tolerated, a well rounded diet is gradually approached by the addition of raw fruit, raw vegetables and whole milk. In the presence of severe distress it may at times be necessary to limit the diet for a few days to gruels, weak tea and melba toast.

If a patient is not constipated to begin with, he soon will become so on the low residue diet outlined. This is overcome by the use of some non-irritating karaya gum bulk producer. If stools still remain hard, they can be controlled by oil retention enemas at night. Phenobarbital in small doses given one half hour before meals will control some of the milder cases. In conjunction I frequently use belladonna or some of the synthetic antispasmodics to good advantage. After meals some patients who have much "heart burn" get substantial comfort from colloidal aluminum hydroxide. In few cases are any of the bile salt preparations desirable or of value. Medicines are at best of value only for temporary relief until the more profound alterations in the causes (the ways of living) can take effect.

This is the hardest disease to treat in the field of gastro-enterology. There is no substitute for time

and attention to detail. These patients are really sick and have genuine distress. The physician who looks on them as neurotics is destined to help from about 10 per cent to 20 per cent of them, while the physician who approaches the problem with sympathy, understanding and the willingness to spend time and thought on the patient can make happy, useful citizens out of about 80 per cent, which is better than can be accomplished in almost any other disease.

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### THE USE OF THE ANDROGENIC HORMONE IN GYNECOLOGY

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Since the discovery of the androgenic hormone, there has been a tremendous amount of study of its effect on the female. This has resulted in voluminous literature on the subject pertaining to both clinical and experimental study. As a result, the male hormone has been added to the hormones used in gynecological problems such as functional uterine bleeding, dysmenorrhea and menopause. Before discussing this hormone in the female, I shall discuss briefly its bisexual quality.

First, it must be remembered that a normal female may excrete as much androgenic substance as a normal male;<sup>1</sup> also, that the bull's testes per weight and the stallion's urine per volume are among the richest known sources of estrogenic substance<sup>2</sup> and that the chemical structures of both the androgenic and estrogenic substances are strikingly similar. To further emphasize the bisexuality of the gonads, normal ovaries have been implanted into castrated male animals resulting in the secondary sexual organs being maintained.<sup>3</sup> On the other hand, testosterone injected into ovariectomized mature rats caused the uterine horns to increase progressively, whereas those rats not injected showed a rapid atrophy of the horns.<sup>4</sup> It has been found that when the androgen, testosterone propionate, was administered to immature female rats, it produced a premature opening of the vagina and growth of the epithelial and muscular elements of both the vagina and uterus, thus demonstrating its gynecogenic or estrogenic effect. Furthermore, vaginal smears revealed in most cases a full estrus effect. At the same time, its androgenic effect was demonstrated by the increased growth of the clitoris and of the male vestige, the

preputial glands. Apparently the hypophysis also was stimulated to secrete the gonadotropic hormone because of the growth of follicles and the appearance of the corpus luteum in the ovaries. Even ovariectomized immature rats show enlargement of the uterus, opening of the vagina and the enlargement of the preputial glands following treatment with testosterone. Also, large doses of testosterone injected in the normal rat produced an enlargement of the uterus and hypertrophy of the vagina exceeding that seen during pregnancy.<sup>5</sup> These and other experiments, such as the reddening of the sexual skin in the monkey,<sup>6</sup> show the strong estrogenic effect the androgen possesses in work done on experimental animals. However, there is another school which shows that a direct contrast to these experiments has been produced.

It was found, for example, that fowls injected with testosterone showed a lesser degree of follicular development and lighter ovaries than those not injected.<sup>7</sup> A suppression of the estrus cycle has been found in mice<sup>8</sup> and rats.<sup>9</sup> Zuckerman<sup>10</sup> reported an inhibition of follicular and luteinizing changes in the ovary resulting in suppression of the menses in monkeys. Similar results were obtained by Huffman and Bos.<sup>11</sup> Others have shown that the typical uterine contractions in rabbits are prevented with the androgen. All of these results are attributed to the suppression of the pituitary gland. That this occurs was demonstrated by Hamilton and Wolfe<sup>12</sup> who transplanted the pituitary glands of androgen injected rats into immature females and found a reduction of gonadotropic properties. Salmon<sup>13</sup> demonstrated a marked decrease in the urinary gonadotropic level after androgenic therapy in a female human castrate, further demonstrating the suppression of the activity of the anterior pituitary gland produced by testosterone.

When one considers the two points of view mentioned, he cannot help but become impressed with the dual activity of this hormone. It must also be remembered that these variations may be dependent upon the dosages used, the extent of treatment and the age and species of the animals. And, too, the result obtained in animal experimentation does not signify that similar results can be expected in the human female. However, testosterone is now being used in gynecological practice when a suppression of the activity of the anterior pituitary gland is desired. The result obtained is worthy of discussion. Before discussing its use, especially in menstrual dysfunction, I shall review the factors which are present in the normal menstrual cycle.

Briefly, the usual concept of the menstrual cycle is with reference to the endometrial changes brought about by the effect of the hormones. The first half of the cycle produces the proliferative phase, due to the estrogenic stimulation present as a result of the development of graafian follicles in

the ovaries. The second half of the menstrual cycle influences the endometrium to change to the secretory phase as a result of the progestational stimulation produced by the corpus luteum. Menstruation occurs as a result of degenerative changes in the endometrium, following the drop of the estrogenic level when the corpus luteum has been disintegrated. Normally, a true menstrual flow is thought to come from a premenstrual or secretory phase of the endometrium. When menstrual dysfunction disturbs the normal picture, it is felt that the endometrium fails to receive the proper amount of stimulation, resulting in a pathologic endometrium. For example, if a maturing follicle fails to rupture and thereby subjects the endometrium to continued estrogenic stimulation, the proliferative phase of the endometrium becomes overproliferative, producing an endometrial hyperplasia resulting in functional uterine bleeding. And, on the other hand, if a deficiency of normal menstrual flow is present as in hypomenorrhea or amenorrhea there is a deficient amount of estrogenic stimulation resulting in a lack of proliferative stimulation or hypoplasia of the endometrium. Greenhill and Freed,<sup>14</sup> however, attach no significance to endometrial changes in ovarian dysfunctions. For example, in amenorrhea they found all stages of the endometrium from the resting to the secretory phase. They further noted a normal secretory endometrium in patients with excessive menstrual flow; and, too, they found that endometrial hyperplasia is not as frequently associated with the functional uterine bleeding as was formerly believed. In fact, they often have found hyperplasia present in patients with amenorrhea and in women with normal menstrual cycles. Thus, a functional uterine bleeding can occur from any type of endometrium, proliferative, secretory, hyperplastic or atrophic. Abarbanel noted that in a few patients the endometrial pictures varied on different occasions with excessive bleeding. Wilson and Kirzok<sup>15</sup> report two cases with a secretory endometrium on the sixth day of the menstrual cycle. A proliferative endometrium was found on the thirteenth day and the transformation produced no bleeding. These authors conclude, therefore, that the treatment of menstrual dysfunction by altering the endometrium is not on a sound basis.

With reference to the bleeding itself, Abarbanel described menstruation as a fundamentally vascular phenomena in the spiral arterioles. The spiral arterioles arise from the arcuate branches of the uterine artery in the middle third of the myometrium. They wind inward and extend to the endometrial surface, many of them not giving off branches in the endometrium. These vessels proliferate with the endometrium, becoming more tortuous and, as the premenstrual cycle is reached, they become more or less spiral in shape. Just prior to the flow these vessels begin to contract and dilate. The peripheral portion of the vessels dilates

in various portions of the mucosa, extravasation of blood occurs, unites with the flow from the venous capillary bed and appears as menstruation. Following the start of flow a vasoconstriction of the arterioles in the uterine mucous membrane occurs, controlling the flow of blood. Abarbanel further states that there is a close structural interrelationship between the blood vessels and the muscle fibers of the myometrium. When the myometrium contracts, the spiral arterioles are constricted and as a result the amount of uterine bleeding is reduced. Thus, one must look to the myometrium and not the endometrium for the control of blood flow.

Geist, Salmon, Gaines and Walter<sup>16</sup> made an interesting study of the effect of various doses of testosterone on the normal female with a normal menstrual cycle. They found that when doses of 500 mg. or more per month were given, menstruation was delayed or completely suppressed. If menstruation occurred, it often was diminished in amount, the endometrium showing either a hypoplasia or atrophy and the vaginal smear showing every evidence of estrogenic deficiency. All these changes disappear after the cessation of treatment. Furthermore, it was noted that when large doses were continued an androgenic effect such as hirsutism, hoarseness and an enlargement of the clitoris was produced. When 300 mg. were given, the menstruation was delayed in some patients and in others the interval was not affected. The amount of flow usually was diminished and the endometrial changes and vaginal smears showed less change. None developed an androgenic effect. When 200 mg. or less were given there was no demonstrable change in endometrium or vaginal smears and the menstruation was not delayed. The amount of flow, however, was diminished.

They also reported that when testosterone is given early in the menstrual cycle, the endometrium is arrested at the early proliferative phase preventing the development of progestational changes. Larger doses caused varying degrees of regression of the endometrium, depending on the dosage used. Similar doses administered during the latter half of the menstrual cycle, that is, following ovulation, did not produce these changes. This seems to indicate that when the hormone was administered during the first half of the menstrual cycle, the secretion of the gonadotropic substance from the hypophysis was inhibited, resulting in a lack of stimulation to the ovaries which, in turn, produced a suppression of ovulation and inhibition of the formation of estrogen and progesterone. Injections given after ovulation had occurred produced no endometrial changes. One can conclude from this report that when the hormone is administered in doses of 300 mg. or less per month there is less fear of producing untoward androgenic effects and that the endometrial changes which occur

with the use of this hormone are produced only when given during the first half of the menstrual cycle.

Functional uterine bleeding is one of the types of menstrual dysfunction in which the use of testosterone for its control has gained considerable attention. The cause of this condition is thought by Abarbanel to be due to the failure of the myometrial portion of the spiral arterioles to be constricted following the onset of menstruation. The status of the endometrium having been found unimportant, the action of the myometrium received consideration. It was found that testosterone inhibits the rhythmic uterine contraction induced by estrogenic stimulation. The pumping action of these rhythmic movements being eliminated, the volume of blood flowing to and through the uterus is decreased. Also it has been found that testosterone has a direct squeezing effect on the myometrial elements, thus bringing about a functional constriction of the myometrial vessels. Both of these actions being simultaneous, a decided reduction in the flow of blood to the endometrium must result, thus diminishing the uterine bleeding.

Clinical reports by Abarbanel, Mazer and Mazer and others have been encouraging. The dosages used were variable and in a majority of cases were below 300 mg. per thirty days. Total doses of from 10 to 120 mg. were found effective in most instances, the lower amounts having no effect on the menstrual cycle other than to arrest the bleeding. Mazer and Mazer<sup>17</sup> further found that these injections did not effect the reduction of fertility, some of the patients having conceived after the treatment was withdrawn. Recently Huffman<sup>18</sup> also reported excellent results in the use of this hormone. He obtained the control of uterine bleeding by giving 25 mg. every other day for a total of twelve to sixteen injections (300 to 400 mg.). He further states that he gave three patients with severe uterine bleeding courses every four to six months to control the excess bleeding. He also gave 10 mg. twice a week to patients complaining of heavy or prolonged menstruation resulting in a decreased amount of flow and a shorter duration. Sturgis, Abarbanel and Nader<sup>19</sup> reported effecting good results in metromenorrhagia in doses of from 5 to 25 mg. every two to four days for two to four injections.

Because of the squeezing effect of testosterone on the myometrial elements and the resultant constriction of the myometrial vessels, this preparation has been found effective in arresting the bleeding of uterine fibroids. Huffman<sup>18</sup> operated upon a patient with a submucous fibromyoma who had received daily injections of testosterone to stop the severe bleeding of many weeks duration. At the operation the uterus was pale and the endometrium thin, thus demonstrating the degree of constriction produced by this androgen.

Testosterone has been used successfully also in dysmenorrhea. Dysmenorrhea is thought to be due to spasmodic contractions of the uterine muscles as a result of hormonal imbalance. The imbalance may exist between the ovarian hormones, estrin and progesterone. For example, an excessive amount of estrogenic hormone, or a deficient amount of progesterone, will allow an increased estrogenic action resulting in increased motility of the uterine musculature. Geist<sup>16</sup> and his coworkers suggest that this condition may be the result of an imbalance between the androgenic and estrogenic hormones normally found in women. As mentioned previously, the androgenic hormone restrains estrogenic action and thus a decreased amount of androgen may allow increased estrogenic action, resulting in dysmenorrhea. Thus, when testosterone is used in treating dysmenorrhea, its beneficial effect is thought to be the result of a diminished motility of the uterus. Leonard<sup>20</sup> and his coworkers have shown that uterine contractions in estrus rabbits are prevented by injections of an androgen. This same action also has been observed in the human uterus. Greenhill and Freed<sup>14</sup> used a total dosage ranging from 150 to 250 mg. given in the latter half of the menstrual cycle. They gave testosterone in doses of from 25 to 50 mg. three times weekly. They further claim that the patient benefited for one year after discontinuance of the therapy. Salmon, Geist and Walter<sup>21</sup> recommended a total of from 250 to 350 mg. through the entire cycle. Greenblatt and Torpin<sup>22</sup> used from 40 to 70 mg. in the latter half of the menstrual cycle with good results.

Testosterone is used also in the treatment of menopause. The menopausal syndrome is due to the marked increase of the hypophyseal hormones in the blood stream. This is brought about by a decreased estrogenic hormone in the blood to hold the hypophysis in abeyance. The administration of an androgenic hormone to suppress the activity of the hypophysis is desirable, whereas, an estrogenic hormone may produce similar results but may produce bleeding as well. Kurzrok, Birnberg and Livingston<sup>23</sup> reported good results in all cases by using from 30 to 50 mg. weekly. They begin by using 25 mg. twice a week, later reducing the dosage to from 30 to 40 mg. weekly. They noted that bleeding was not inhibited when doses of from 30 to 40 mg. were given. Silverman, Radman and Abarbanel<sup>24</sup> reported using only 5 mg. two to three times a week, the interval lengthened by clinical improvement. Symptoms such as hot flushes and cold sweats were relieved to a great extent by injections, according to their report. Greenblatt and Torpin<sup>22</sup> used 50 mg. a week for five weeks with excellent results.

At this point I would like to describe what I feel is an unusual result while using testosterone for menopause. A patient was having severe menopausal complaints including extreme nervousness,

excitability, flushes, sweating, headaches, marked hypertension and emotional instability. For several years she had had frequent attacks of menorrhagia and metrorrhagia. A pelvic examination failed to reveal any abnormal masses. No endometrial examination was made. After an absence of about two years, during which time she stated she enjoyed comparatively good health, she was also amenorrheic. Because of the extreme menopausal complaints and previous history of profuse menstrual bleeding, I decided that testosterone would be ideal in this case. I started the patient on injections of 10 mg. of testosterone every three to four days. After three injections she became extremely uncomfortable complaining of severe flushes, headaches and vertigo. After four injections of 10 mg. and one injection of 2.5 mg. the patient began bleeding profusely and bled continuously for over two weeks, the bleeding being profuse for several days. In the literature thus far, I have not seen a single report of bleeding produced in a patient who was being treated with the androgenic hormone for menopause. I realize that the dosage was small. However, small doses have proven effective in treating these conditions. The reason for this bleeding remains unexplained. It may have been coincidental.

Beilly and Solomon<sup>25</sup> report the use of testosterone to inhibit lactation. They gave three injections of 25 mg. each at twelve hour intervals. It is interesting to note that in more than 80 per cent of the patients lactation was inhibited completely when treatment was given on the second and fifth days postpartum. The injection had no effect on the involution of the uterus. Lactation being associated with hypophyseal control, the inhibiting effect of this hormone on the anterior pituitary gland produces this result. Kirzrok and O'Connell<sup>26</sup> inhibit lactation by injections of 25 mg. twice daily for from one to three days.

Testosterone is used in other breast conditions as breast engorgement, mastopathies and premenstrual painful breast. Greenhill states that 150 mg. given in the last two weeks of the menstrual cycle usually suffices. Greenblatt and Torpin<sup>22</sup> report excellent results in premenstrual tension by injections of 10 mg. on the seventeenth, twenty-second and twenty-seventh days of the menstrual cycle.

#### SUMMARY

I have discussed the bisexuality of the gonads produced in experimental animals. In gynecology the androgenic hormone is used only in those patients in whom a suppression of the anterior pituitary gland is desirable. In this way various menstrual dysfunctions and mammary disturbances are alleviated or corrected. The dosage necessary in most cases is below 300 mg. This is sufficiently low to avoid androgenic effects. It should be mentioned that androgen therapy should not be given to patients with masculine contour or markings as

facial hirsuties, coarse hair on the thighs or enlarged clitoris. These characteristics will be intensified under androgenic therapy.

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More important than the recent revolutionary developments in the technic of anesthesia is the realization that the field is intensely complicated, requiring the balanced judgment of highly trained medical men, McKinnie L. Phelps, M.D., New York, declares in *Hygeia, The Health Magazine*.

**PERNIO (CHILBLAINS)**

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Unusual dermatological phenomena, occurring during the fall and winter, may be of cold sensitivity origin. The environmental temperature has a direct effect on the peripheral circulation. This is well illustrated in cases of Raynaud's disease and allied conditions by the increase and severity of symptoms during the fall and winter. Patients suffering from cold sensitivity are unfortunate as the condition has a tendency to last throughout the cold season and to occur regularly each year. Besides the unpleasant symptoms which accompany these conditions, there also is a certain amount of cosmetic effect. The severity of the disorders varies with the environmental temperature. After warm weather returns, the signs and symptoms are alleviated and vice versa. Although these disorders occur frequently, they are seldom diagnosed and the patient too often is treated for some type of eczematous condition while the underlying factor is vascular.

Pernio is a definite peripheral vascular disease in patients who are sensitive to sudden changes of temperature. It need not be a freezing temperature. Pernio has a tendency to occur in the early fall and is most commonly seen in females, probably the result of the greater exposure of their bodies. The condition is characterized by the sudden development of raised red areas, from pin point areas to blebs in character. It may involve all the exposed parts but more often affects the lower extremities from below the knee to the internal malleolus. The involved skin appears to be in a state of chronic inflammation and feels cold to the touch. The lesion is moderately painful and has a tendency to ulcerate and weep as long as cold weather persists. The pain is of a burning character and is aggravated by dependency and

muscular activity. When ulceration takes place, the pain usually subsides. In the spring the disease clears up with a certain amount of scar tissue formation and pigmentation of the skin. During the healing stage, the outstanding symptom is pruritus of the involved skin. Constitutional symptoms such as nausea, anorexia, weakness, fever and moderately rapid pulse may accompany the condition. The blood picture usually is not affected; however, a moderate leukocytosis frequently is observed.

It has not been determined as yet whether this condition is solely a vasomotor reaction of allergic origin or is due in part to chronic inflammation. However, it is believed that some permanent change in the walls of the peripheral vessels exists and that the minute vessels are completely dilated while the arterioles are unusually constricted.

Since cold temperatures are the cause of this malady, it is imperative to protect the patient from all cold elements. The importance of warm clothing is apparent. However, after the disease manifests itself, excessive warmth produces discomfort and pain. In such cases, warmth should be applied moderately and increased as improvement in the condition occurs. Immunization by daily cool baths, gradually lowering the temperature, is of value. The vasodilator group of drugs are seemingly helpful but are of short duration. For a more prolonged action, mecholyl iontophoresis may be tried. The important factor in treating these patients is to attempt to restore and improve the impaired circulation by means of passive vascular exercise, which is best obtained by the vasoscillator. A typical case of pernio is presented to give a clearer picture of this interesting condition.

**CASE REPORT**

Mrs. A. L., aged 70, was first seen in the office in the early spring of 1936 at which time she complained of a severe pruritus, dermatitis with ulceration of both lower extremities extending from below the knees to the internal malleolus. The disorder returned promptly each fall, each time in a more severe form.

On November 20, 1940, the patient came to the office for a general check-up. The examination disclosed nothing except scar formation and pigmentation of the



Fig. 1.



Fig. 2.

lower extremities from previous attacks of dermatitis and ulcerations. The large saphenous veins were moderately dilated but there was no evidence of varicosities. The skin of the entire body was clear and free from eruptions. On that particular day there was a sudden drop in temperature, to 37 F. according to the United States Weather Bureau, accompanied by strong winds. To reach her home, the patient had to transfer three times and waited each time for a street car.

On November 25, 1940, the patient was examined at her home, being too uncomfortable to come to the office. She was still wearing the same underwear that she had worn to the office. This underwear, originally full length, had been cut to knee and elbow lengths in irregular edges and flaps. All skin unprotected by the underwear, even the small areas between the irregular flaps and edges, was covered by a severe papular eruption. It appeared markedly irritated and reddened. The face, ears and hands became edematous and discolored. As the condition progressed, ulceration took place with the discharge of a serous exudate over most of the affected area, but especially so over the lower extremities. The constitutional symptoms were mild, the chief complaint being pain and pruritus of the involved parts.

The patient was ordered to bed in a warm room. Warm boric acid compresses were applied to the skin. Internal medication, such as torantil and sedatives, was given with doubtful results. She remained in her room from November 25, 1940, until February 12, 1941, and at the present time appears to be improved. The eruption has subsided but the pruritus still exists to some extent.

#### COMMENT

The increase in the number of unusual dermatological conditions occurring in the fall and winter began in the short skirt era. These conditions are often of vascular origin. The importance of recognizing these conditions and instituting adequate treatment is stressed. A typical case of pernio is presented.

1401 Southwest Boulevard.

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#### TWO CASES OF SKIN RASH FROM DEXTRIN USED AS ADHESIVE ON TAX STAMPS

Two cases of a skin rash due to the dextrin used as an adhesive on tax stamps are reported by J. D. Walters, M.D., and E. C. Stern, M.D., Cleveland, in *The Journal of the American Medical Association* for April 5.

The two patients affixed the stamps by hand to packaged goods. They both recovered quickly when long sleeved garments were used at work, when the containers of the water for moistening the stamps were washed frequently and when the hands and cloths used to wipe away excess moisture from the stamped goods were rinsed frequently in running water.

Discussing adherents on labels, stamps and other gummed articles, the authors say: "It is a fact that dextrin products used in numerous occupations, such as paper hanging and bookbinding, can often produce a dermatitis (skin rash). It is interesting to note, also, that the adherent surface of the United States postage stamps has an 85 per cent dextrin content."

#### ACUTE ANTERIOR POLIOMYELITIS

##### A REVIEW

G. R. PETERS, M.D.

AND

M. L. PETERS, M.D.

CAMERON, MO.

Cecil<sup>1</sup> defines acute anterior poliomyelitis as a general systemic infectious disease which tends to involve the central nervous system, attacking especially the gray matter of the spinal cord but capable of producing widely scattered lesions throughout the brain and cord.

The disease was first described by Underwood of England in 1774 but the first group of cases subjected to a close study was in 1840 by von Heine of Germany. The next important step was not made until 1909 when two Viennese investigators, Landsteiner and Popper, transferred the disease from man to monkey; and Flexner and Lewis succeeded in transmitting the disease in monkeys from one generation to another.

That poliomyelitis is caused by a filtrable virus and that it is an infectious disease, being transmitted from person to person, is now generally conceded. Children, of course, are more susceptible, the highest incidence apparently being between the second and seventh years of life. More recently attacks of the disease, which formerly were diagnosed as other conditions, are being recognized in older individuals. The disease tends to be less severe and less crippling in older persons. I recall two cases last summer of a mother and son. The son was first struck with fever, rigidity of the neck and spine, muscle tenderness and weakness, rather definitely an acute poliomyelitis. Within seven days the mother had fever, headache, slight neck rigidity and muscular weakness but never loss of use of her extremities or change in any of her reflexes. One must conclude that she had a mild or abortive case of poliomyelitis; and certainly in the absence of the child's case a diagnosis of poliomyelitis on his mother would have been obscured. There is considerable backing for the theory that the explanation of the adult's relative immunity is that a mild attack in childhood was not recognized as such.

From the epidemiological standpoint, by far the greater number of cases are seen in the late summer or early fall so the disease is one primarily of warm weather. This statement is not as true as was formerly thought as mild cases now are being recognized during other seasons. It has also been demonstrated that apparently healthy individuals are carriers and probably form the bridge by which the disease is carried from one season to another.<sup>1,2</sup>

Read before the Clinton County Medical Society, November 6, 1940.

The pathology is relatively unimportant in this discussion. The anterior horn cells of the spinal cord are most commonly affected.

The relative severity of symptoms and parts affected by the disease give the three classifications<sup>3</sup> of the malady, namely, (1) mild or abortive type, (2) spinal type and, (3) bulbo-spinal type. To these some add a fourth type, the polioencephalitis type, which they consider as being due to the virus of poliomyelitis.

As the symptoms are well known, only a brief review is necessary. There is a febrile, preparalytic phase and a paralytic phase of the disease. The importance of early diagnosis should be emphasized, but it is extremely difficult to make. The individual usually complains of fever, headache, anorexia or vomiting, muscle soreness and prostration on the first day, followed by neck rigidity and other signs of meningeal irritation, until paralysis usually appears on the second or third day. Reflex reactions are erratic; they may be normal, exaggerated or absent. Kernig's sign is of doubtful value in children because of lack of cooperation from the patient. Spinal puncture reveals some increase in pressure and from ten to twenty cells although the number of cells may be higher. Spinal puncture is one of the most important steps in early diagnosis and should be done as soon as possible.

As stated, paralysis usually appears on the second or third day. The initial paralysis nearly always indicates the extent to which it will go. The spinal type affects the muscles of the trunk and body, is usually assymmetrical and patchy and may attack a single muscle or group of muscles. In the bulbar type the muscles and centers of respiration are affected leading to respiratory paralysis and the most dreaded form of the malady.

As yet little can be offered in the way of a safeguard against this disease. A number of methods have been tried, the first of which was a vaccine made from the spinal cords and brains of infected monkeys. This was a failure as were other attempts made with immune serum. In the last five years, most of the research has been along the line of an intranasal chemoprophylaxis. The literature was reviewed and the results of some of these attempts given by Ashley.<sup>2</sup> He accepts without equivocation the belief that the spread of the disease is due to the dissemination of droplets from the nasopharynx of infected carriers. In support of the hypothesis that the nasal mucous membrane is the port of entry for the virus of poliomyelitis he gives the following evidence:

1. The only area where the central nervous system is exposed on the surface of the body is the olfactory epithelium.

2. The olfactory area is the only portion of the body where poliomyelitis can be produced regularly and without trauma in experimental animals.

3. Other body surfaces have been found invulnerable to the virus of poliomyelitis.

4. It is extremely difficult to infect animals by way of the blood stream.

5. The virus of poliomyelitis is detected in the nasal mucosa of diseased persons and carriers; and has been detected in one person who contracted the disease five days later.

6. After severing the olfactory tracts in monkeys they could not be infected with poliomyelitis.

Ashley then argues that if anything is to be done in the way of prophylaxis the intranasal route is most logical.

Armstrong and Harrison<sup>4</sup> in 1935 sprayed the nose with a 4 per cent solution of alum and believed the procedure tended to prevent the disease. Shortly afterward Schultz and Gebhardt<sup>5</sup> used a 1 per cent zinc sulfate solution which was thought to be more successful. They explained their results by theorizing that the protection was due to a change in permeability of the mucous membrane and not due to a chemical action on the virus.

The reaction from zinc sulfate is unpleasant, causing a burning sensation, coryza and a headache which lasts for several hours. This is eliminated by preliminary spraying with pontocaine hydrochloride solution or some topical anesthetic. The sense of smell is temporarily lost for one or two weeks but most investigators believe there is no permanent damage to the nose.

The technic of the use of zinc sulfate is not complicated but the otolaryngologists contend that it should be left in their hands and, since the procedure is of doubtful benefit, it behooves the general practitioner to let them keep it. Suffice it to say, the patient is laid on a table with the head hanging over the edge and extended. The solution is then applied, preferably by a spray.

As to the results obtained there are not many series of cases but in the 1937 Toronto epidemic 5,200 children were sprayed, and 4,600 were given a second spraying. There were 6,300 controls used. No appreciable difference was found in the incidence of poliomyelitis among the two groups. This, then, seems to support the statement that zinc sulfate is of doubtful value as a public health measure. However, the idea of intranasal chemoprophylaxis seems the logical approach to a pertinent problem.

The treatment of this disease is divided into the preparalytic and paralytic phases of the acute form, and postparalytic in the chronic form of the malady.

For the period before paralysis a general symptomatic treatment is indicated. Of all the procedures mentioned the use of convalescent serum seems to be of most value, but only if given before paralysis or muscular weakness sets in. Since the diagnosis often is obscured and deferred it is a dif-

ficult problem to institute treatment early enough to be of benefit. Too, the difficulties of procuring convalescent blood and making ready for use of convalescent serum is almost insurmountable without a well equipped laboratory.

Rosenow<sup>6</sup> of the Mayo Clinic is alone in advocating the use of antistreptococcus serum in the treatment of acute poliomyelitis. No other authorities have duplicated his work.

Of late, sulfanilamide and sulfapyridine are being used with conflicting reports. Rosenow<sup>7</sup> claims that sulfapyridine is a failure in experimental animals. Wagner<sup>8</sup> among others, reports the case of a 9 year old girl showing a dramatic response in the decrease of the white blood count and drop of temperature to normal levels within twenty-four hours after instituting sulfapyridine therapy. As yet, the reports are conflicting and the efficacy of the drug cannot be established definitely until further clinical trial.

Another controversial therapeutic agent has been introduced to the English speaking people within the last year and a half. Contat<sup>10</sup> of Switzerland, in the 1937 epidemic, had, as a matter of symptomatic treatment in an early case of poliomyelitis, prescribed potassium chlorate for the relief of the sore throat accompanying the disease. He was greatly surprised at the favorable turn taken by the patient, a child, as the temperature soon became normal and signs of meningeal irritation and paralysis disappeared. The child was given some immune serum also. Struck by the undeniable clinical remission of the disease following potassium chlorate administration, he treated his next nineteen cases with the drug plus the immune serum. The next sixteen cases were treated with the drug alone. Of the thirty-five cases there was no fatality and little permanent paralysis. Faced with such striking results Contat with Arthus, Debat and Spycher<sup>10</sup> began animal experiments by inoculating nine monkeys with poliomyelitis virus, using four as controls and treating five. All of the untreated controls died and the treated ones recovered. Again, they repeated their experiments with equal success using a dosage of 1/10 gram per kilo of body weight in a vehicle of raspberry syrup. They were most careful in their conclusions and requested prolonged clinical trial before acceptance of this drug as a general measure.

This therapeutic agent has had little clinical trial on this continent. Saucier and Stewart<sup>11</sup> in experiments reported in January 1940 attempted to duplicate the findings of the Swiss investigators but found the drug to be a failure in experimentally inoculated monkeys. Because of the well known propensities of the drug to form methemoglobin and the varying doses which cause toxic reactions, it will probably never be widely used unless it is 100 per cent specific.

However, it stimulates one to believe that the cure for poliomyelitis may lie in chemotherapy and

not biotherapy, just as the sulfanilamide derivatives are conquering the coccic infections in the face of failures of serums and vaccines.

Immediate treatment after paralysis is exemplified in one word—rest. That means not just bed rest but immobilization of the affected parts in the best anatomical position by means of splints or plaster casts.

As to when the supports are to be removed and physiotherapy started, authorities differ. Some believe mild treatment should begin as soon as the child will permit,<sup>1</sup> others in four weeks<sup>3</sup> and some as long as six weeks.<sup>9</sup> Passive motion only is to be used at first with gentle massage and finally active motion. Both active and passive motion are well supplemented by hydrotherapy. Remember never exercise a weakened muscle to the point of fatigue or much damage may result. General hygienic measures are also necessary. Orthopedic consultation is necessary for the correction of deformities and mechanical devices (braces) or surgery may be advised in due time. Although the orthopedist is responsible for correcting deformities there is much the general practitioner can do for the chronic poliomyelitis victim. My effort and time in compiling this paper have been wasted if I cannot drive home this single point. The big field of physiotherapy and occupational therapy is untouched by many simply because of a defeatist attitude. "What can I do," one says, "in the face of the extensive atrophy and deformity of this extremity?" "I do not know but try something," is my reply and plea. It is a slow and exhausting process but I have yet to see an arm or leg which does not show some degree of improvement and often a surprising degree after corrective measures, exercise and physiotherapy. Do not allow the patient or the parents to become discouraged; and remember, judicious and persistent treatment during the first six months of this disease may prevent a life time cripple.

#### SUMMARY

1. Poliomyelitis is defined and the general features of the disease discussed as a review.
2. Prophylaxis is considered and the conclusion reached that intranasal chemoprophylaxis is an interesting and promising approach but that zinc sulfate has not had sufficient clinical trial to be used as a public health measure.
3. The treatment of the acute form of the disease is reviewed with a discussion of potassium chlorate as a specific.
4. The importance of corrective measures and physiotherapy in the chronic form is emphasized and the average physician urged to pay more attention to this field of endeavor.

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## SPECIAL ARTICLE

### STATE PNEUMONIA CONTROL PROGRAM FOR 1940

#### REPORT

HARRY F. PARKER, M.D.  
STATE HEALTH COMMISSIONER  
JEFFERSON CITY, MO.

The State Pneumonia Control Program did not get under way until late in January and for the first six months practically was limited to the six counties of the state which at that time had full-time county units; namely, Marion, Miller, St. Louis, Cass, Jackson and Greene counties and the City of St. Joseph.

For the 1940-1941 pneumonia season additional facilities were provided in the district health units. These included thirteen additional approved laboratories where facilities were provided for laboratory work including sputum typing, blood cultures and oxolate tubes for doing blood counts. This made a total of twenty-two typing stations. Thirty-four additional control stations were established in the offices of the district health officers and county nurses. In these stations there were made available a stock of sulfapyridine, sputum containers, blood culture bottles containing special broth media, oxolate tubes for doing blood counts and necessary record forms for reporting and keeping case histories. The facilities of the State Board of Health Laboratory at Jefferson City and the branch laboratory at Springfield are available for all laboratory work. This brought the total of available pneumonia stations to fifty-six covering all sections of the State, or an average of one for every two counties. Up until January 1, 1941, three districts and one county health unit had failed to make use of any of these facilities.

Some 305 cases have been reported, 192 reported in the first six months from January 1 to July 1, and 113 reported for the last six months from July 1 to January 1.

The various county and district health units with the amount of participation by each is as follows:

Health Unit	Number of cases reported
Marion County	95
Cass County	55
Miller County	30
Greene County	22
Pemiscot County	9
City of St. Joseph	9
St. Louis County	13
Jackson County	19
Jasper County	0
District No. 2	23
District No. 7	21
District No. 11	3
District No. 8	1
District No. 4	4
District No. 5	0
District No. 6	0
District No. 9	0
District No. 10	1
<b>TOTAL</b>	<b>305</b>

Although a fairly large number of cases were reported for the first year, this showing is rather disappointing in that only three counties, Marion, Cass and Miller, seem to be making full use of the facilities provided. These three counties reported 59 per cent of the cases. The fact that these three counties in widely separated areas of the state are making extensive use of the facilities would tend to indicate that possibly the physicians in some of the other counties do not fully understand the operation of the program.

The total cost of this program to date including serum, chemotherapeutic drugs as sulfapyridine, typing sets to be used for the cooperating laboratories, blood culture outfits, oxolate tubes and records for reporting, but exclusive of administrative personnel, is \$3,492.58 or an average of \$11.84 per patient. Although low, this will be greatly reduced as the initial cost of setting up the control stations is spread over a greater number of cases.

Of the cases reported there was a predominance of lobar pneumonia, 212 cases to 84 cases of bronchopneumonia. Sixty per cent of the cases, or 183, were treated in the home. The average dose of sulfapyridine necessary was 24 grams.

Of the 212 cases of lobar pneumonia reported, it was possible to get a specific typing in 118 of the cases or 55.6 per cent. The most predominant types found were types 1, 2, 7 and 8. Sixty-eight cases or 58 per cent showed one of these four types. The type specific serum was used in thirty-seven cases or 12.13 per cent of the cases in the entire series of both lobar and bronchopneumonia.

There was a total of twelve deaths reported, eight from lobar pneumonia and four from bronchopneumonia. The case fatality for lobar pneumonia was 3.78 per 100 cases and for bronchopneumonia 4.24 per 100 cases. The case fatality for the entire series was 3.93 per 100 cases, including both types of pneumonia.

#### CONCLUSIONS

1. Although the State Cooperative Pneumonia Control Program has been operating only one year,

facilities are available to a majority of the physicians of the state.

2. In only three counties of the state are the physicians taking full advantage of the facilities for pneumonia control offered by the State Board of Health.

3. The cost per patient of the pneumonia control program, \$11.84, is not high and will be further reduced as the program extends into the 1940-1941 pneumonia season.

4. Information in regard to securing typing, drugs and sera for treatment of pneumonia cases by the private physicians can be secured from all county health officers, district health officers or county nurses.

State Board of Health of Missouri.

### IS TREATED EFFECTIVELY

Infections of the respiratory tract complicating surgical operations or severe injury should be treated in the same manner as any acute lung infection, Lewis T. Stoneburner III, M.D., and Maxwell Finland, M.D., Boston, advise in *The Journal of the American Medical Association* for April 5.

Pointing out that the availability of highly potent specific remedies for the treatment of pneumonia, such as serums and sulfapyridine and sulfathiazole has resulted in a sharp drop in the death rate from this disease wherever such remedies has been used extensively, the two physicians declare that "it is probably fair to say that pneumonia occurring after surgical operations or after serious trauma (injury) is usually considered by both surgeons and laymen to be an unfortunate complication which often results in fatalities when the treatment of the primary condition is otherwise successful."

They report on their findings from 279 cases of pneumococcal pneumonia complicating surgical operations and 92 such cases occurring after serious injuries. In all instances the type of pneumonia was ascertained. Modern specific treatment was found by them to be as effective in pneumonia following injuries as in primary cases of the disease and also to be highly effective in cases following operations.

They advise that pneumococcus typing should be done and cultures of sputum or of material from the throat and blood cultures should be taken as soon as a diagnosis of pneumonia is suspected. Treatment with sulfapyridine and sulfathiazole should be instituted, under proper control, as soon as evidence of pneumonia appears. Specific antipneumococcus serum may be given as soon as it is evident that the drug is not effective or is not properly tolerated.

### TREATMENT OF A MIDDLE EAR DISEASE

A regimen for the prevention of and active treatment using helium oxygen mixtures for aero-otitis media (inflammation of the middle ear due to changes in atmospheric pressure) in tunnel workers is reported in *The Journal of the American Medical Association* for April 19 by William H. Requarth, M.D., Chicago.

Preventive measures offered by Dr. Requarth are largely concerned with physical examinations before employment inasmuch as he advises that persons predisposed to infections of the upper part of the respiratory tract should not engage in such work. Adequate instruction of employees also is imperative, he says. This should include a demonstration of Valsalva inflation of the ear, which involves closing the nose and

mouth and then forcefully exhaling. Lock tenders should stop after every 2 to 3 pounds increase in pressure and ascertain whether all workers have opened their ears. Those who have failed to do so should be referred to a physician for treatment. This is important inasmuch as many men will otherwise remain in the lock and attempt to open their ears by vigorous inflation. Treatment is directed toward equalization of the pressure in the middle ear by reestablishing communication of the middle ear and its passages to the pharynx. The nose is sprayed thoroughly with chemicals preparatory to the administration of helium. The gas is given under pressure through a mask or breathing bag in a mixture consisting of eighty parts of helium and twenty parts of oxygen. The average patient obtains relief in four minutes. Obstinate cases may require ten minutes. Longer treatment is useless.

### VITAMIN K FOR HEMORRHAGE IN INFANTS

As a means of preventing hemorrhage, a hazard confronting practically all infants during the first few days of life, George P. Bohlender, M.D., William M. Rosenbaum, M.D., and Earl C. Sage, M.D., Omaha, advise in *The Journal of the American Medical Association* for April 19 that a vitamin K preparation be given by vein to all mothers before delivery. They say the time of administration makes no apparent difference in the results obtained because their investigations in 50 cases showed that vitamin K effectively prevents a deficiency of the clotting factor of the blood in newborn infants during the first week, regardless of the time of administration to the mother before delivery. After about the sixth day of life the clotting factor of an infant's blood becomes normal.

### DESCRIBES NEW DIVING APPARATUS FOR USE OF LIFEGUARDS

A diving apparatus for life saving work on beaches, which is an independent unit and which can be put on and be in operation in fifteen seconds or less, is described by Christian J. Lambertsen, Philadelphia, in *The Journal of the American Medical Association* for March 29.

"Frequent drownings occur in spite of apparently adequate patrolling of beaches and lakes by trained lifeguards," the author says. "A swimmer who, because of panic or exhaustion, sinks beneath the surface of the water is usually quickly lost to sight. The task of the lifeguard is to swim down under water, holding his breath, in an attempt to locate the drowning person. Holding the breath while undergoing the exertion of swimming under water is extremely tiring. Rarely can an untrained person remain under water in this manner for more than one minute or dive deeper than about 30 feet. . . . Valuable time is wasted in coming to the surface for air, and time is an all-important factor in an emergency of this sort."

The apparatus described permits underwater breathing for from eighteen to twenty-five minutes in depths of water to 60 feet. Its foundation is a harness that fits persons of various sizes. It weighs but 12½ pounds and consists of an inhaler, breathing tubes, a soda lime container, rebreathing bags and a cylinder of oxygen.

Although it was originally designed for the rescue of drowning persons and for the recovery of bodies from deep water, it has such other uses, the author says, as inspecting damage to hulls of boats, minor underwater repairs, pearl and sponge fishing and sport, such as goggle fishing.

With slight modification it can be adapted for use in oxygen deficient atmospheres or in places containing noxious gases. Thus it could be used in mines, sewers, chemical plants and gas companies.

# THE JOURNAL

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MAY, 1941

## EDITORIALS

### THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

### ST. LOUIS SESSION

The Missouri State Medical Association will hold its Eighty-Fourth Annual Session in St. Louis, April 28, 29 and 30, with all meetings convening in the Jefferson Hotel.

The Session will open with the meeting of the House of Delegates at 9:30 a. m. Monday morning. At 10:00 a. m. a dry clinic will be presented by the faculties of Washington University School of Medicine and St. Louis University School of Medicine for members who are not delegates.

The Annual Banquet in honor of Past Presidents to which all members, their guests and the members of the Woman's Auxiliary are invited will be held Monday evening at 7:00 p. m. in the Gold Room of the Jefferson Hotel. Dr. Morris Fishbein, Chicago, Editor of the *Journal of the American Medical Association*, will be the guest speaker and his subject will be "American Medicine Prepared." Following the banquet, Dr. Cyrus E. Burford, St. Louis, President, will be honored at a reception which will be followed by dancing.

The Committee on Scientific Work is presenting a program that it believes will be valuable to all members. The program which appears on page 169 includes the following guest speakers: Dr. Morris Fishbein, Chicago; Dr. R. G. Spurling, Louisville, Associate Professor of Surgery, University of Louisville School of Medicine; Dr. Russell L. Cecil, New York, Professor of Clinical Medicine, Cornell University Medical College; Dr. Clyde L. Deming, New Haven, Clinical Professor of Urology, Yale University School of Medicine; Dr. Willard M. Allen, St. Louis, Professor of Obstetrics and Gynecology, Washington University School of Medicine; Dr. Meyer Bodansky, Galveston, Professor of Chemistry, Department of Public Health and Preventive Medicine, University of Texas Medical School; Dr. Lawrence S. Fallis, Detroit, Surgeon-in-Charge, Henry Ford Hospital; Dr. A. E. Bennett, Omaha, Assistant Professor of Neuropsychiatry, University of Nebraska College of Medicine; Dr. Walter C. Alvarez, Rochester, Professor of Medicine, University of Minnesota Graduate School; Dr. Samuel A. Cosgrove, Jersey City, Clinical Professor of Obstetrics, Columbia University College of Physicians and Surgeons; Dr. Paul B. Magnuson, Chicago, Associate Professor of Surgery, Northwestern University Medical School; Dr. Harrison F. Flippin, Philadelphia, Instructor of Medicine, University of Pennsylvania School of Medicine; Dr. Jean M. Stevenson, Cincinnati, Assistant Professor of Surgery, University of Cincinnati College of Medicine.

Dr. Samuel A. Cosgrove, Jersey City, will be the guest of the Committee on Maternal Welfare and Infant Care at the annual meeting of the Committee which will be held as a luncheon meeting at 12:00 noon Monday. Dr. Cosgrove will also speak in the General Meeting.

Round table discussions will be held at luncheon meetings on Tuesday and Wednesday of the Session.

Forty commercial companies will exhibit their products in the Commercial Exhibits on the Mezzanine Floor. Several members have prepared Scientific Exhibits which also will be on the Mezzanine Floor.

The St. Louis Medical Society will be hosts to members at a stag dinner and entertainment on Tuesday evening. Alumni and fraternity reunions are scheduled as a cocktail party on Tuesday from 6:00 to 7:00 p. m.

Committees in charge of the Session follow:

General Committee on Arrangements: Dr. Curtis H. Lohr, St. Louis, Chairman; Dr. C. E. Fallet, DeSoto, and Dr. H. B. Goodrich, Hannibal.

Local Committee on Arrangements: Dr. Daniel L. Sexton, Chairman.

Executive Committee: Dr. Joseph C. Peden, President, St. Louis Medical Society; Dr. Curtis H. Lohr, Councilor, Third Councilor District; Dr. Daniel L. Sexton, General Chairman, Local Committee on Arrangements.

Scientific Exhibits: Drs. Sherwood Moore, Chairman; R. V. Powell, Theodore H. Hanser, H. H. Kramolowsky, A. P. Rowlette.

Technical Exhibits: Drs. M. J. Pulliam, Chairman; R. B. H. Gradwohl, O. B. Zeinert, Carl F. Vohs, Paul F. Fletcher.

Registration: Drs. Joseph E. Glenn, Chairman; Earl R. Rice, Martin F. Engman, Jr., James F. Clancy, Alvin E. Vitt.

Publicity: Drs. Grayson L. Carroll, Chairman; Franz J. Arzt, Maxwell Fineberg, Thomas M. Martin, Walter Baumgarten.

Entertainment: Drs. Edwin C. Ernst, Chairman; Joseph A. Hardy, Jr., Jerome I. Simon, Otto S. Krebs, Joseph L. Gross.

Finance: Drs. Charles E. Hyndman, Chairman; Drew Luten, Roland S. Kieffer, Emma Phelan, Edwin C. Funsch.

Hotels: Drs. A. R. Shreffler, Chairman; George F. Rendleman, Leonard T. Furlow, Curtis A. Meyer, A. H. Conrad.

President's Reception: Drs. V. V. Wood, Chairman; Rev. Father A. M. Schwitalla, Drs. Philip A. Shaffer, Joseph Grindon, Sr., John C. Morfit, Robert E. Schlueter, Louis H. Behrens, R. Emmet Kane, Albert H. Hamel, William W. Graves, William H. Vogt, Roland Hill, Fred W. Bailey, Amand Ravold, Charles H. Neilson, Cleveland H. Shutt, Vilray P. Blair, Charles E. Hyndman, Frank J. V. Krebs, Neil S. Moore, Lee D. Cady, Curtis H. Lohr, Alphonse McMahon, Ross A. Woolsey, Malvern B. Clopton, Carroll Smith, Frederick E. Woodruff, John N. Dean, David P. Barr, William P. Glennon, Evarts A. Graham, Louis Rassieur.

## AMERICAN MEDICAL ASSOCIATION WILL APPEAL VERDICT

In the case in which the United States Government brought suit against the American Medical Association, three other medical associations and twenty-one individuals for violation of the Sherman Anti-Trust Act, the jury gave its verdict on April 4 acquitting the individuals and two of the organizations but finding the American Medical Association and the District of Columbia Medical Society guilty. Concerning the verdict, an editorial in the April 12 issue of *The Journal of the American Medical Association* states:

"When the prosecution had completed presentation of its evidence, Justice Proctor directed the jury to acquit the Harris County Medical Society, the Washington Academy of Surgery and two of the individual defendants. One of the individual defendants, Dr. Groover, died before the case came to trial. The final decision of the jury found the American Medical Association and the District of Columbia Medical Society guilty and declared all of the individual defendants not guilty.

"Newspapers, radio commentators and many others at once expressed confusion in endeavoring to understand this verdict. This confusion arose because five members of the staff of the American Medical Association, including the Secretary, the only ones connected by the prosecution with this case, were declared by the jury to be innocent of the charges, yet the organization itself was found guilty. Likewise the verdict found the defendant officials and members of the various committees of the District of Columbia Medical Society to be innocent, and yet the organization itself to be guilty. The attorneys for the American Medical Association and the District of Columbia Medical Society are undertaking at once legal procedure toward setting aside this verdict and toward making a suitable motion to appeal.

"The instructions given to the jury by Justice Proctor, which are published in full in this issue of *The Journal* should be of interest to every physician. They state succinctly the extent to which the activities of the American Medical Association in carrying on its affairs, in raising the standards of medical colleges and hospitals by inspection and approval or disapproval, in the publication of facts regarding medical activities, and in the maintaining of the Principles of Medical Ethics fall within the bounds of legal conduct."

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## NEWS NOTES

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National Hospital Day will be celebrated on May 12. Programs are being planned in different parts of the state to acquaint people with the place of the hospital in community life.

Dr. Richard L. Sutton, Jr., Kansas City, has been elected a member of the Royal Society of Edinburgh, an organization of physicists, engineers, mathematicians, biologists and physicians.

The first annual lecture in honor of Dr. Russell D. Carman, sponsored by the St. Louis Society of Radiologists, was presented on March 25 by Dr. B. R. Kirklin, Rochester, Minnesota. Dr. Kirklin spoke on "Cancer of the Gastrointestinal Tract: Its Early Manifestations."

Dr. Rogers Deakin, St. Louis, was a guest of the St. Clair County (Illinois) Medical Society at Belleville, Illinois, on April 2. His subject was "Interrelationship of the General Practitioner and Urologist in the Management of Urological Problems."

The Trudeau Club of St. Louis and the St. Louis Medical Society held a joint meeting on April 8 at the St. Louis Medical Society Building, St. Louis. Dr. John H. Peak, Oakdale, Iowa, superintendent of the Iowa State Tuberculosis Sanatorium, was the guest speaker.

The creation of a national reservoir of blood plasma to be used by the Army and Navy for emergency transfusions and for treatment of civilians injured in disasters is now actively under way. The American Red Cross is sponsoring the project in response to a joint request made early in February by the Surgeon General of the Army, Dr. James C. Magee, and the Surgeon General of the Navy, Dr. Ross T. McIntire.

The American Association of Obstetricians, Gynecologists and Abdominal Surgeons will again award "The Foundation Prize" of \$150 for the best manuscript submitted by interns, residents or graduate students in obstetrics, gynecology or abdominal surgery or physicians who are actively practicing or teaching obstetrics, gynecology or abdominal surgery. Manuscripts must be submitted by June 1. Information may be obtained from Dr. James R. Bloss, Secretary, 418 Eleventh Street, Huntington, West Virginia.

Committees on Arrangements for the thirty-fifth annual meeting of the Southern Medical Association to be held in St. Louis, November 11 to 14, 1941, have been announced. Dr. Neil S. Moore is general chairman; Drs. Frederick A. Jostes and Curtis H. Lohr, vice general chairmen; Dr. Garold V. Stryker is secretary, and Drs. Joseph C. Peden, Alphonse McMahon and Neil S. Moore form the executive committee. Other committee chairmen are: Finance, Dr. Llewellyn Sale; St. Louis day program, Dr. Daniel L. Sexton; entertainment, Dr.

E. V. Mastin; membership, Dr. Anthony B. Day; hotels, Dr. J. Hoy Sanford; radio, Dr. Joseph A. Hardy, Jr.; publicity, Dr. Arthur W. Proetz; alumni reunions, Dr. B. J. McMahon; fraternity luncheons, Dr. James L. Mudd; scientific exhibits, Dr. O. P. J. Falk; hobbies, Dr. Paul F. Titterington; information, Dr. F. D. Gorham; transportation, Dr. J. W. Thompson; golf, Dr. Leo Bartels; trap shooting, Dr. John W. Hotz; women physicians, Dr. Emma Phelan.

## DEATHS

**Johnson, William E., M.D.**, Warrensburg, graduate of the Barnes Medical College, St. Louis, 1896; member and past president of the Johnson County Medical Society; Fellow of the American Medical Association; aged 66; died February 3.

**Welch, Albert S., M.D.**, Kansas City, graduate of Rush Medical College, Chicago, 1923; member, past president and editor of the *Bulletin* of the Jackson County Medical Society; Fellow of the American Medical Association; assistant professor of medicine, University of Kansas School of Medicine; author of "Clinical Interpretation of Laboratory Reports"; aged 44; died February 7.

**Benham, Charles E., M.D.**, Tarkio, graduate of the University Medical College of Kansas City, 1900; past president of the Atchison County Medical Society; honor member of the Nodaway-Atchison-Gentry-Worth County Medical Society; aged 75; died February 20.

## NUTRITIONAL VALUE OF VITAMIN D IN MILK HAS LIMITATIONS

"Except in the cases of some lactating women (who are nursing babies), evidence is meager that milk containing more than 400 U. S. P. (United States Pharmacopeia) units of vitamin D to the quart would have any nutritional advantages over milk containing but 400 U. S. P. units to the quart," the Council on Foods and Nutrition of the American Medical Association declares in the Association's *Journal* for February 1, in explaining why it has voted not to include for the present in its list of accepted foods any brands of milk for which claims are made that they contain more than this amount of the vitamin.

"For persons who need more than the amount of vitamin D which can be provided with suitable amounts of milk containing 400 U. S. P. units of it to the quart, numerous other preparations can be described, such as those described in *New and Nonofficial Remedies*," the Council says. "Incidentally, it may be stated further that the Council believes preparations such as those described in N. N. R. are fully as effective, unit for unit, as vitamin D in the form of vitamin D milk, provided the concentration of vitamin D is not appreciably greater than 180 units to a gram of oil.

"The evidence hitherto available suggesting the desirability of a higher amount of vitamin D in milk for protection from dental caries is not considered conclusive. Should evidence be developed to indicate that milk of higher potency is nutritionally desirable, the Council then will give further consideration to the acceptability of such products.

"One quart of vitamin D milk containing 400 U. S. P. units of vitamin D is equivalent in vitamin D potency to one and one-third teaspoon of minimum strength U. S. P. cod liver oil.

## MISSOURI STATE MEDICAL ASSOCIATION

84th Annual Meeting, Jefferson Hotel, St. Louis

The 84th Annual Session of the Association convenes at the Jefferson Hotel, St. Louis, Monday, Tuesday and Wednesday, April 28, 29, and 30, 1941.

## HOUSE OF DELEGATES

First Meeting—Monday, April 28, 1941—9:30 a. m.

Crystal Room, Jefferson Hotel

## Order of Business

Report of Committee on Credentials.  
Reading of Minutes of Previous Meeting. (Published in July, 1940, JOURNAL.)  
Election of Speaker of House of Delegates.  
Election of Vice Speaker of House of Delegates.  
Reading of President's Message and Recommendations.  
Appointment of Reference Committees:  
    Amendments to Constitution and By-Laws.  
    Resolutions.  
    Miscellaneous Affairs.  
    Medical Education and Public Welfare.  
Report of General Committee on Arrangements: Curtis H. Lohr, St. Louis, Chairman.  
Report of Local Committee on Arrangements: Daniel L. Sexton, St. Louis, Chairman.  
Report of the Secretary.  
Report of the Treasurer.  
Report of Committees:  
    Scientific Work: J. E. Stowers, Kansas City, Chairman.  
    Postgraduate: C. H. Neilson, St. Louis, Chairman.  
    Publication: Walter Baumgarten, St. Louis, Chairman.  
    Public Policy: Morris B. Simpson, Kansas City, Chairman.  
    Defense: Charles E. Hyndman, St. Louis, Chairman.  
    Medical Education and Hospitals: L. W. Dean, St. Louis, Chairman.  
    Cancer: D. A. Robnett, Columbia, Chairman.  
    Medical Economics: Carl F. Vohs, St. Louis, Chairman.  
    Mental Health: B. Landis Elliott, Kansas City, Chairman.  
    Maternal Welfare and Infant Care: Ralph R. Wilson, Kansas City, Chairman.  
    Health and Public Instruction: E. Lee Miller, Kansas City, Chairman.  
    Constitution and By-Laws: Herbert L. Mantz, Kansas City, Chairman.  
    Fractures: Frank D. Dickson, Kansas City, Chairman.  
    Conservation of Eyesight: Winfred L. Post, Joplin, Chairman.  
    Control of Venereal Disease: G. V. Stryker, St. Louis, Chairman.  
    Industrial Health: E. C. Funsch, St. Louis, Chairman.  
Report of Special Committees:  
    Physical Therapy: A. J. Kotkis, St. Louis, Chairman.  
    Study of Medical Practice Laws: J. Milton Singleton, Kansas City, Chairman.  
    Medical-Legal Affairs: James R. McVay, Kansas City, Chairman.  
    Tuberculosis: E. E. Glenn, Springfield, Chairman.  
    Rural Medicine: H. A. Lowe, Springfield, Chairman.  
    Medical Military Affairs: William J. Shaw, Fayette, Chairman.  
Appointment of Committee on Nominations.  
Unfinished Business.

*Recess Until 4:30 p. m.—Crystal Room, Jefferson Hotel*

Report of the Council: Curtis H. Lohr, St. Louis, Chairman.  
Report of Reference Committees:  
    Amendments to Constitution and By-Laws.  
    Resolutions.  
    Miscellaneous Affairs.  
    Medical Education and Public Welfare.  
New Business (Resolutions, Memorials, etc.)  
Selection of Place of Next Meeting.

Second Meeting—Wednesday, April 30, 1941—4:00 p. m.—  
Crystal Room, Jefferson Hotel

Report of Committee on Credentials.

Reading of Minutes.

Election of Officers:

Election of President-Elect.

Report of Committee on Nominations.

Report on Election of Councilors.

Installation of President.

Nominations for Standing Committees by President and Confirmation by  
House of Delegates.

Unfinished Business. (Report of Reference Committees.)

DRY CLINIC

Monday, April 28—10:00 a. m.—Gold Room, Jefferson Hotel

Dr. Robert A. Moore, St. Louis, Moderator.

Presented jointly by St. Louis University School of Medicine  
and Washington University School of Medicine.

Peptic Ulcer.

What Should We Feed This Baby?

MATERNAL WELFARE COMMITTEE

Annual Meeting

Monday, April 28, 1941—12:00 noon—Private Dining Room 1,  
Second Floor, Jefferson Hotel

Dr. Ralph R. Wilson, Kansas City, Chairman, Presiding.

Selected Case Reports of Maternal Deaths.

Critique of Reports of Maternal Deaths

—Samuel A. Cosgrove, M.D., Jersey City, N. J.

Clinic Presentations.

Podalic Version (Motion Picture)

—Presented by E. Lee Dorsett, M.D., St. Louis

GENERAL MEETING

Monday, April 28, 1941—2:30 p. m.—Gold Room, Jefferson Hotel

2:30 p. m. Painful Arm and Shoulder With Special Reference  
to the Problem of Scalenus Neurocirculatory Com-  
pression ..... R. G. Spurling, M.D., Louisville



Pain about the shoulder girdle or in the arm often is due to compression of the nerves and blood vessels at the level of the anterior scalenus muscle. This disorder has come to be known as the "scalenus syndrome," "the Naffziger syndrome" or "scalenus neurocirculatory compression." Scalenus compression may be a primary pathologic state or it may result from trauma or disease about the cervical spine, the shoulder joint or any of the bursae in the shoulder girdle. A full discussion of the anatomical peculiarities of this region, the incidence, the clinical symptoms and signs, the pathology, the etiology, the treatment, both operative and conservative, prognosis and results will be given in detail.

3:00 p. m. Practical Lessons Learned From a Fifteen Year Mor-  
tality Study in Toxic Goiter. . Robert W. Bartlett, M.D.,  
and Willard Bartlett, Jr., M.D., St. Louis

Approximately 1,500 consecutive thyroidectomies for toxic goiter are divided into two periods, (1926-1930) and (1931-1940), for comparison and study. Patients admitted to hospitals and dying before operation always represent neglect by the patient, occasionally by the physician also. Previous study of the first period resulted in an improved plan of estimating operative risks which is reflected in the greatly decreased inci-

dence of serious postoperative hyperthyroid reactions in the second period plus a cutting in half of the operative mortality to 1.7 per cent. Deaths from crisis are predictable by these criteria of operability while accidental deaths as from pulmonary embolism are not and accompany any type of surgery. There have been no deaths from crisis since 1935. The dangers associated with the progressive damage of hyperthyroidism plus a 4 per cent incidence of malignant degeneration in nodular goiters far outweigh the present day risk of thyroidectomy.

3:30 p. m. Survey of Persons Receiving Blind Pensions in Missouri From 1923 to 1940

—John F. Hardesty, M.D., St. Louis

As Medical Director of the St. Louis Society for the Blind, I undertook a survey of all persons in the state receiving blind pensions from 1923 to 1940 in the hope of bringing to light facts which might help in prevention of blindness work. During the years surveyed, 9,417 persons were given blind pensions. Tables are given showing cause of blindness with percentages, race, color, sex, age at onset and habitat. Attention is called to certain trends in the etiological factors causing blindness and the hope is expressed that the figures given, while not exact, may be of use in preventing unnecessary blindness.

4:00 p. m. Clinical Use of the Sex Hormones

—Willard M. Allen, M.D., St. Louis

The various types of estrogens now available, their use in conditions such as menopause, vaginitis, amenorrhea and dysmenorrhea will be discussed. Emphasis will be placed on the practical results which can be expected from the use of estrogens in the treatment of these disturbances.

4:30 p. m. House of Delegates. Crystal Room.

7:00 p. m. Dinner in Honor of Past Presidents. Gold Room.

9:30 p. m. President's Reception. Gold Room.

## ANNUAL BANQUET

In Honor of Past Presidents

Monday, April 28—7:00 p. m.—Gold Room, Jefferson Hotel

Dr. Cyrus E. Burford, St. Louis, President, Presiding.

Tendered by Officers of the Association, Presidents and Secretaries of County Medical Societies, Members of the House of Delegates, Members of the Association and Their Guests, Members of the Woman's Auxiliary.

Address of Welcome

—Joseph C. Peden, M.D., St. Louis, President, St. Louis Medical Society

Announcements

—Daniel L. Sexton, M.D., St. Louis, Chairman, Local Committee on Arrangements

The Community Health League. . . . James R. McVay, M.D., Kansas City

Introduction of Past Presidents of the Missouri State Medical Association.



Morris Fishbein, M.D., Chicago,  
Editor, *The Journal of the American Medical Association*

American Medicine Prepared

President's Reception and Dancing.

GENERAL MEETING

Tuesday, April 29, 1941—8:30 a. m.—Gold Room, Jefferson Hotel



8:30 a. m. Address of the President.  
Cyrus E. Burford, M.D., St. Louis



8:50 a. m. Address of the President-Elect.  
R. B. Denny, M.D., Creve Coeur.

9:10 a. m. Treatment of Chronic Arthritis  
—Russell L. Cecil, M.D., New York

"Chronic arthritis" is a generic term which covers a number of different diseases, most important of which are rheumatoid arthritis, osteoarthritis and gouty arthritis. Etiology and diagnosis of each of these three types of arthritis will be discussed with lantern slide demonstration. Treatment of the three types will be given with special reference to gold therapy in the treatment of rheumatoid arthritis.

9:40 a. m. Herniated Nucleus Pulposus  
—R. G. Spurling, M.D., Louisville

Intervertebral disk lesions, particularly herniation of the nucleus pulposus, are responsible for many cases of intractable low back and unilateral sciatic pain. However, only a small percentage of patients with low back disability alone have intervertebral disk lesions, hence, it is exceedingly important that the clinical characteristics be kept clearly in mind when a differential diagnosis is attempted. The purpose of this report is to review in detail the clinical symptoms and signs, the pathological anatomy, the anatomic features pertinent to the subject, the operative treatment and the end results in a series of two hundred fifty verified cases of ruptured intervertebral disk with herniation of the nucleus pulposus.

10:10 a. m. Relation of Hypertension to Renal Disease  
—Clyde L. Deming, M.D., New Haven



Hypertension and renal disease have long been known to exist together. The presence of one or both of the lesions usually shortens the life of the individual. Only within recent years has medicine given any hope for the recovery or the prolongation of life of these patients. The experimental work of Goldblatt and Winternitz offers many factors which the clinician can apply in the recognition and treatment of these conditions. With these factors in mind, the relationship between hypertension and renal disease can be demonstrated in many patients. Patients who are hypertensive or who are potentially hypertensive should have the advantage of a thorough investigative study of renal circulation and renal function. Some patients cannot be improved, others can be made to live longer and a third group can be relieved of hypertension.

10:40 a. m. The Use of Laboratory Data in Clinical Medicine  
—Meyer Bodansky, M.D., Galveston

The positive contributions of the clinical laboratory to general and specialized medical practice are widely recognized. But important as laboratory data may be in confirming a diagnosis, in guiding therapy, in promoting useful knowledge or in supplying, not infrequently, the key to a diagnosis, the fact nevertheless remains that without compe-

tent consultation no data from the laboratory answer all the questions, furnish the complete diagnosis or constitute an adequate substitute for the clinical examination and the physician's acumen and judgment. Owing to the variability of biologic phenomena (bacteriologic, serologic, chemical and other tests applied to human subjects fall into this category), the interests of the patient and of medical practice are best served by intimate collaboration between clinician and clinical pathologist.

- 11:10 a. m. Differential Diagnosis of Conditions Causing Pain in the Lower Back . . . . . Paul B. Magnuson, M.D., Chicago



Structures in the back which may cause pain and the diseases to which they are subject; similarity of symptoms in these various conditions and analysis of the cause and evaluation of the conditions; how to make examinations which will bring out important information for the purpose of diagnosis, and nerve symptoms which simulate pressure within the canal will be discussed.

- 11:40 a. m. Surgical Care of Fresh Traumatic Wounds  
—Jean M. Stevenson, M.D., Cincinnati

The discussion will include the fundamental principles of the debridement of fresh traumatic wounds. With the aid of photographs and lantern slides, the steps of a practical, effective, operative procedure will be outlined.

### ROUND TABLE LUNCHEON

Tuesday, April 29, 1941—12:00 noon—Crystal Room, Jefferson Hotel

#### Luncheon Meeting

Dr. Ralph A. Kinsella, St. Louis, Presiding.

Internal Medicine . . . . .	{ Russell L. Cecil, M.D., New York
	{ Meyer Bodansky, M.D., Galveston
Surgery . . . . .	Jean M. Stevenson, M.D., Cincinnati
Urology . . . . .	Clyde L. Deming, M.D., New Haven
Orthopedics . . . . .	Paul B. Magnuson, M.D., Chicago

### GENERAL MEETING

Tuesday, April 29, 1941—2:00 p. m.—Gold Room, Jefferson Hotel

- 2:00 p. m. Development of Benign Prostatic Overgrowth  
—Clyde L. Deming, M.D., New Haven

Tumors are best treated when the histogenesis is understood. The surgical specimen of prostatic overgrowth is mostly glandular. For many years students of research have attempted to explain the development of so-called prostatic hypertrophy from glands of the urethra and prostate. In the light of the newer studies, the older theory appears as a paradox. It will be demonstrated by serial sections that the development of the tumor passes through two phases, the primary phase being the development of a myomatous nodule and the second phase, the invasion of the primary nodule by epithelial tissue forming a glandular mass. Discussion of the etiologic factors is included.



- 2:30 p. m. Fetal-Maternal Interdependence: Nutritional and Metabolic Factors  
—Meyer Bodansky, M.D., Galveston

The chemical and physiological mechanisms of the body which normally maintain a state of relative equilibrium, or so-called "physiological homeostasis," are placed under considerable stress and strain during pregnancy. Normal fetal development and maternal welfare depend on the way in which the pregnant organism accommodates itself to the various metabolic deviations and to other factors, both intrinsic and extrinsic.

- 3:00 p. m. Local Isolation Treatment of Boils  
—Jean M. Stevenson, M.D., Cincinnati

Combining the usual concept of surgical cleansing and an isolation technic for a focus of infection emitting virulent organisms, a method

is offered for the care of boils which has been very successful in the prevention of the development of new lesions near the original site of inoculation and elsewhere over the body.

- 3:30 p. m. Fractures on the Battle Field and the Roadside: How Do They Differ? . . . . . Paul B. Magnuson, M.D., Chicago

Transportation and splinting of fractures, simple or compound; the importance of proper first aid and its effect on the ultimate result; primary and secondary care of compound fractures and what one may expect from chemotherapy; the army plan; casts and splints and when they may best be used and in what type and location of fracture will be discussed.



- 4:00 p. m. Management of Abruptio Placentae  
—Samuel A. Cosgrove, M.D., Jersey City, N. J.

- 4:30 p. m. Chemotherapy of Pneumonia  
—Russell L. Cecil, M.D., New York



Various sulfonamide derivatives will be discussed and compared briefly. Merits of serum therapy versus chemotherapy will be given with lantern slide demonstration of pneumonia treated with sulfapyridine, sulfathiazole and sulfadiazine. Toxic manifestations of the drug, with special emphasis on blood and renal complications, will be discussed. Statistics on fatality rates will be presented.

- 6:00 p. m. Medical Alumni and Fraternity Reunions. Cocktail Party. Crystal Room.

- 7:00 p. m. Dinner and Entertainment for Members. St. Louis Medical Society, Host. Stag. Gold Room.

### GENERAL MEETING

Wednesday, April 30, 1941—8:30 a. m.—Gold Room, Jefferson Hotel

- 8:30 a. m. Puzzling Types of Abdominal Pain  
—Walter C. Alvarez, M.D., Rochester, Minnesota

The consultant sees many patients with curious abdominal pains which his experience promptly tells him are probably not due to any demonstrable disease in the abdominal cavity. He may be so sure of this that he will refuse to countenance an exploratory operation. Some pains are perhaps neuralgias, others are due to spondylitis, others to abdominal migraine and others to neuroses and psychoses. Fortunately when one knows the fine points in the history, one usually can make a diagnosis even without the help of laboratory and roentgenologic studies.

- 9:00 a. m. Regional Enteritis. . . . . Lawrence S. Fallis, M.D., Detroit



The large number of case reports on regional enteritis in the current literature suggests that the incidence of this disease is increasing. Regional enteritis is a disease of young adult life and males are affected more frequently than females. In the acute stage of the disease, the diagnosis usually is made at the operating table on patients submitted to emergency operations for supposedly acute appendicitis. In the chronic stage of the disease the symptoms at first are those due to ulceration of the mucosa but later obstructive symptoms predominate. Fistula formation is common. On the basis of an experience of twenty-eight cases at the Henry Ford Hospital, resection appears to be the operation of choice in patients requiring surgical intervention. Recurrence of the disease is common after operation.

- 9:30 a. m. The Late Functional Results in the Skin Grafting of Burns.....James Barrett Brown, M.D., and Frank McDowell, M.D., St. Louis

Large surface defects and extensive contractures in burned patients often may be best repaired with thick split grafts. Complete restoration of function may be obtained in only a small number of operations and the condition of patients for as much as eleven years after operation has been recorded in motion pictures. The results are shown to be permanent and the grafts to have persisted and either grown or stretched out during these long periods of growth. By using a method of splitting the skin in two so that from one half to three fourths of the full thickness is included in the graft, enough derma is left to permit surface healing by a "dedifferentiation" of the deep glandular epithelium into squamous epithelium. In this way, with healing of the donor site insured, large areas up to 200 square inches can be grafted at one time and multiple crops of skin may be cut from the same donor area.

- 10:00 a. m. Modern Treatment of the Mentally Ill  
—A. E. Bennett, M.D., Omaha

A historical review of the development of modern psychiatric treatment shows that scientific psychiatric therapy is of recent origin. Factors leading to these changes are: (1) the mental hygiene movement through its educational program, (2) better psychiatric training of physicians and nurses, (3) emphasis the World War placed on the need of better psychiatric treatment, (4) research development as the introduction of artificial fever therapy and vitamin and pharmacologic shock therapy and, (5) the recent development of better psychiatric treatment facilities especially in general hospitals. The results obtainable by artificial fever therapy, insulin shock and convulsive shock therapy in various psychoses are explained. Newer concepts in managing toxic deficiency states and deliria have greatly improved our results. The improved methods of treating minor psychoses by psychotherapy and efficient psychiatric nursing are also described.



- 10:30 a. m. The Significance of Abnormal Bleeding  
—Willard M. Allen, M.D., St. Louis

Abnormal vaginal bleeding occurring at various ages will be discussed and emphasis placed on the role of malignancy in such disturbances. Brief attention will be given to the use of sex hormones in treatment of abnormal vaginal bleeding.

- 11:00 a. m. Simple Tests for the Quick Differentiation of Common Sedative Drugs With Particular Reference to the Barbiturates .....Hurley L. Motley, M.D., Columbia

A physician suddenly may be confronted with the need of rapid identification of sedative drugs. Present accepted procedures are so complicated or require so many reagents if tests are made for more than one drug that most physicians do not attempt them, rather depending on laboratories for such analysis, and the time element is often too long. The tests to be discussed are qualitative, simple to perform, few reagents are required, only a few moments time is required and test tubes and medicine droppers constitute the apparatus. The test can be performed at the patient's bedside as well as in the physician's office. Kodachrome slides showing typical reactions will be shown.

- 11:30 a. m. Cardinal Principles of Sulfonamide Therapy  
—Harrison F. Flippin, M.D., Philadelphia

The intelligent use of the sulfonamides in the field of clinical chemotherapy demands, first, an understanding of their therapeutic limitations; second, knowledge of their absorption by, distribution in and excretion from the body and, third, the early recognition of the toxic manifestations associated with their use. The types of bacterial infections in which these compounds exert maximum therapeutic effectiveness are considered. The fundamental principles regarding the behavior of sulfanilamide, sulfapyridine, sulfathiazole and sulfadiazine, as well as the factors influencing the behavior of these drugs in the body, are presented. Indications, contraindications, dosages, methods of administration, toxic effects and the necessary precautions for the clinical use of the sulfonamides are discussed.



# ROUND TABLE LUNCHEON

Wednesday, April 30, 1941—12:00 noon—Crystal Room, Jefferson Hotel

## Luncheon Meeting

Dr. James E. Stowers, Kansas City, Presiding

Internal Medicine.....	{	Walter C. Alvarez, M.D., Rochester
	{	Harrison F. Flippin, M.D., Philadelphia
Surgery.....		Lawrence S. Fallis, M.D., Detroit
Neuropsychiatry.....		A. E. Bennett, M.D., Omaha
Gynecology.....		Willard M. Allen, M.D., St. Louis

## GENERAL MEETING

Wednesday, April 30, 1941—2:00 p. m.—Gold Room, Jefferson Hotel

2:00 p. m. Curare in Neuropsychiatry... A. E. Bennett, M.D., Omaha



The historical background of curare as used by jungle Indians and previous experimentation in clinical medicine is given. The pharmacology and physiology of the drug and reasons for unsuccessful use of the drug are explained. The potential uses of curare or a curare-like drug are outlined. Clinical experiments with spastic, athetoid and hyperkinetic neurologic diseases are review. The successful application of curare in convulsive shock therapy of mental disorders is shown. Traumatic hazards of convulsive shock therapy are completely eliminated and the scope of usefulness of this therapy has been widened by curare therapy.

2:30 p. m. Modern Control of Pneumonia

—Harrison F. Flippin, M.D., Philadelphia

The discovery of the effectiveness of sulfapyridine in pneumococcus infections reopened the entire field of chemotherapy in pneumonia and constituted the greatest advance in the control of this disease. In addition to the therapeutic value of this form of treatment, certain other advantages associated with its use are mentioned. Comparative studies on the effectiveness and toxicity of sulfapyridine, sulfathiazole and sulfadiazine in pneumonia are presented. Indications for the administration of serum are discussed. Factors influencing the fatality rate of pneumonia treated with sulfonamides are considered. Experience with the use of these drugs in a state health program is discussed. The importance of widespread lay education regarding the early recognition of pneumonia and the prompt institution of specific therapy is stressed.

3:00 p. m. What Is the Matter With the Patient  
Who Is Always Tired?

—Walter C. Alvarez, M.D., Rochester, Minnesota



One in three patients seen by a consultant complains most of feelings of fatigue, exhaustion and inability to work. These patients go from one physician to another hoping that some diseased organ will be found and that when this is removed they will be well. These people take up much of the busy physician's time. They are often a puzzle to him. Actually, the essayist feels that in most cases the correct diagnosis can be made easily even without the help of much laboratory and x-ray work.

3:30 p. m. Diagnosis and Treatment of Common Anorectal

Diseases.....Lawrence S. Fallis, M.D., Detroit

The anorectal region is the site of numerous lesions which, in spite of their accessibility, often remain undetected by the practitioner. Investigation of this area too often consists only of a perfunctory digital examination which results in a diagnosis of hemorrhoids while the real cause of the complaint is cryptitis or anal ulcer. Complete investigation consisting of inspection, palpation and anoscopic examination should be routine when the chief symptom is pain. Proctoscopic examination is added to this when bleeding is the main complaint. Only by insistence on these routine investigations in all cases of rectal bleeding will it be possible to make early diagnosis of rectal carcinomas and remove the existing stigma which permits the performance of rectal operations on 25 per cent of all patients with carcinoma of the rectum during the period when they are actually harboring the growths.

4:00 p. m. House of Delegates. Crystal Room.

5:00 p. m. Council. Private Dining Room 6, Second Floor.

## SCIENTIFIC EXHIBITS

## Mezzanine Floor, Jefferson Hotel

- Cancer. Illustrating work of the Ellis Fischel State Cancer Hospital; various types of cancer and some of the treatment methods used at the Hospital.....Cancer Commission of the State of Missouri
- Conservation of Eyesight.....Committee on Conservation of Eyesight,  
Winfred L. Post, M.D., Joplin, Chairman
- Dissected Specimen and Transparencies of Anatomic and Pathologic Subjects.....Kansas City Anatomic Society,  
Ralph R. Coffey, M.D., W. Byron Black, M.D., John A. Growdon, M.D., John Bangeman, M.D., Kansas City  
Anatomic Films.....W. W. Buckingham, M.D., Kansas City
- Fibrositis.....Oliver Abel, Jr., M.D., and  
Walter J. Siebert, M.D., St. Louis
- Fractures.....Committee on Fractures,  
William J. Stewart, M.D., Columbia
- Fresh Pathological Specimens.....St. Louis Pathological Society,  
Robert A. Moore, St. Louis
- Photographic Studies of Results of Treatment of Cancer  
—Tumor and Cancer Service, Kansas City General Hospital, E. Kip Robinson, M.D., Kansas City
- Psychoses of Old Age.....G. Wilse Robinson, M.D.;  
G. Wilse Robinson, Jr., M.D.; Prior Shelton, M.D., Kansas City
- Repair of Burns With Free Skin Grafts..James Barrett Brown, M.D., St. Louis
- Surgical Films.....Davis & Geck, Inc., Brooklyn, N. Y.
- Tuberculosis.....George D. Kettelkamp, M.D., Koch
- Types of Paroxysmal Tachycardia and Their Treatment  
—A. Graham Asher, M.D., Kansas City

## COMMERCIAL EXHIBITS

## Mezzanine Floor, Jefferson Hotel

THE BORDEN COMPANY, 350 MADISON AVE., NEW YORK. BOOTH 1.



Visit the Borden Company exhibit to see infant foods of unsurpassed quality. Biolac, the distinctive new liquid infant food, affords convenience, economy and optimal nutrition. Beta Lactose is nature's carbohydrate in an improved, readily soluble form. Dryco provides formula flexibility for every feeding problem. Also Klim, Merrell-Soule Products and Irradiated Evaporated Milk are displayed.

SMITH, KLINE & FRENCH LABORATORIES, PHILADELPHIA. BOOTH 2.

The medical specialties of Smith, Kline & French Laboratories are on display in booth 2. The new display being used this year effectively puts these products at your fingertips where you can see and handle them. Mr. William Stewart is the representative in charge.

J. B. LIPPINCOTT COMPANY, EAST WASHINGTON SQUARE, PHILADELPHIA. BOOTH 3.

Among the interesting Lippincott publications on display are Kugelmass' "Newer Nutrition in Pediatric Practice," Becker and Obermayer's "Modern Dermatology and Syphilology" and Dickson and Diveley's "Functional Disorders of the Foot" which has already gone into a second printing. Leaman's brand new book, "Management of the Cardiac Patient" is also displayed. Other interesting works include Thorek's "Modern Surgical Technic," Rigler's "Outline of Roentgen Diagnosis," Barborka's "Treatment by Diet" and many others.

PET MILK SALES CORPORATION, ARCADE BUILDING, ST. LOUIS. BOOTH 4.

A working model irradiator in miniature, demonstrating the method by which the vitamin D content of Pet Milk is increased by exposure to ultraviolet light, is being exhibited. General information on Pet Milk in relation to infant feeding is available. Miniature Pet Milk cans will be given to each physician visiting the exhibit.

**ELI LILLY AND COMPANY, INDIANAPOLIS. BOOTH 5.**

Eli Lilly and Company are demonstrating the germicidal efficacy of Merthiolate (Sodium Ethyl Mercuri Thiosalicylate, Lilly) and the compatibility of the antiseptic with body cells and fluids.

**MEAD JOHNSON & COMPANY, EVANSVILLE. BOOTH 6.**

Mead Johnson & Company are exhibiting several new products in addition to Dextri-Maltose, Pabulum and Oleum Percomorphum. They also have on display various examples of the slogan "Servamus Fidem"—"We Are Keeping the Faith."

**PARKE, DAVIS & COMPANY, DETROIT. BOOTH 7.**

Featured in the Parke, Davis exhibit are the sex hormones, Theelin and Theolol; antisyphilitic agents such as Mapharsen and Thio-Bismol; posterior lobe preparations including Pituitrin, Pitocin and Pitressin, and various Adrenalin Chloride preparations.

**A. S. ALOE COMPANY, 1819 OLIVE STREET, ST. LOUIS. BOOTHS 8 AND 9.**



A. S. Aloe Company is showing a complete selection of American Made Stainless Steel instruments and a full line of equipment for the physician and hospital. Among the interesting specialties exhibited are: Aloe Steeline Furniture, the Aloe Diagnostic X Ray, St. Joseph's Infant Incubator and newly designed wood furniture for the physician's treatment room. Mr. J. Hugh Knight and Mr. E. R. D'Amato are in charge of the exhibit.

**GREB X-RAY COMPANY, 1412 GRAND AVE., KANSAS CITY. BOOTH 10.**

Greb X-Ray Company, as exclusive distributor of the products of the Picker X-Ray Corporation in this area, will be pleased to welcome their many friends and invite attending physicians to make their booth their headquarters during the meeting.

**BURROUGHS WELLCOME & CO. (U. S. A.) INC., 9-11 EAST FORTY-FIRST STREET, NEW YORK. BOOTHS 11 AND 12.**

Burroughs Wellcome & Co. is presenting a representative group of fine chemicals and pharmaceutical preparations, together with new and important therapeutic agents of special interest to the medical profession.

**HOLLAND-RANTOS COMPANY, INC., 551 FIFTH AVE., NEW YORK. BOOTH 13.**



Modern contraceptive technic is being graphically illustrated with a motion picture and all the various contraceptive materials including both the Koromex and Hyva diaphragms. Koromex and H R Emulsion jelly, together with the most complete line of contraceptive specialties, are being demonstrated at the booth of the Holland-Rantos Company. Samples and instructive literature are available.

**SCHERING CORPORATION, BLOOMFIELD, NEW JERSEY. BOOTH 14.**

The Schering Corporation displays the entire group of highly advanced Schering hormone preparations (including Oretan-M, the new orally effective tablets for male hormone therapy), distinguished for their potency, absolute purity and economy in actual practice. Other specialized products of interest include Neo-Iopax, the Council Accepted urographic medium, and a new preparation Ludozan, the antacid having strikingly valuable physiological properties. Members of the Medical Research Division are present to discuss endocrine or other problems.

**WINTHROP CHEMICAL COMPANY, INC., 170 VARICK STREET, NEW YORK. BOOTH 15.**



Winthrop Chemical Company, Inc., extends a cordial invitation to visit their booth. Of particular interest at this time is Sulfathiazole, the latest chemotherapeutic triumph. Representatives will be glad to discuss this preparation as well as several other recent contributions made by this company. Booklets, many of them handsomely illustrated, on Salyrgan-Theophylline, Diodrast, Atabrine Dihydrochloride, Avertin with Amylene Hydrate, Novocain and Pontocaine Hydrochloride are available.

**M & R DIETETIC LABORATORIES, INC., COLUMBUS, OHIO. BOOTH 16.**

M & R Laboratories, Inc., are displaying Simlac and powdered SofKurd. Representatives will be glad to discuss the merits and suggested application of these products.

**LEA & FEBIGER, 600 WASHINGTON SQUARE, PHILADELPHIA. BOOTH 17.**

Lea & Febiger are exhibiting Portis' "Digestive Diseases," Kraines' "Psychoses," Anderson's "Physical Diagnosis," Ballenger's "Manual," Lewin's "The Foot and Ankle," Rony's "Obesity and Leanness," Ruggles' "Roentgenology," Joslin's "Diabetes" and "Manual," Fishberg's "Heart Failure," Cushny's "Pharmacology," and Comroe's "Arthritis."

**THE MEDICAL PROTECTIVE COMPANY, FORT WAYNE, INDIANA. BOOTH 18.**

The most exacting requirements of adequate liability protection are those of the professional liability field. The Medical Protective Company, specialists in providing protection for professional men, invites you to confer, at their exhibit, with the representative. He is thoroughly trained in Professional Liability underwriting.

## PEVELY DAIRY COMPANY, 1001 S. GRAND, ST. LOUIS. BOOTH 19.



Pevely Dairy Company is exhibiting their Council Accepted Evaporated Milk. The use of evaporated milk in infant feeding has been adopted quite universally and has done a great deal to simplify dietary problems. It is always uniform in composition, easy to prepare and its low cost is an added feature.

## THE DICK X-RAY COMPANY, 3974 OLIVE ST., ST. LOUIS. BOOTH 20.

The Dick X-Ray Company will display the Westinghouse Portable D shock-proof x-ray unit together with one of the new type fluorescent type illuminators. Several models of the well known Liebel-Flarsheim short-wave equipment will be displayed as well as Simpli-trol Electrocardiographs.

## MERCK &amp; CO., INC., RAHWAY, N. J. BOOTH 21.

The exhibit of Merck & Co., Inc., includes interesting information on the following chemotherapeutic agents; Sulfapyridine in pneumococcal infections; Sulfathiazole in pneumococcal pneumonia and staphylococcal infections; Tryparsamide Merck for neurosyphilis; Vinethene, an inhalation anesthetic for short operative procedures; Pyridium for urogenital infections; Mecholyl for chronic ulcers, Raynaud's disease, and vitamins. The seventh edition of "The Merck Manual" is now off the press. Orders may be placed at the Merck booth where Mr. S. A. Gaffney is in charge.

## H. G. FISCHER &amp; CO., 2323-2345 WABANSIA AVE., CHICAGO. BOOTH 22.

H. G. Fischer & Co. 1941 models of x-ray and short wave apparatus are so distinctive, both in improved performance and in various instances greatly lowered price, that every physician should consider inspection a convention obligation. The complete H. G. Fischer & Co. line includes shockproof x-ray apparatus, short wave units, combination cabinets, galvanic and wave generators, ultraviolet and infra-red lamps and many other units, accessories and supplies. Physicians attending the convention are invited to ask for demonstration of apparatus in which they are interested and to consult with the representative regarding technics made available by Fischer apparatus.

## PETROLAGAR LABORATORIES, 8134 MCCORMICK BLVD., CHICAGO. BOOTH 23.

Representatives at Booth 23 have an interesting story to tell of the numerous uses of Petrolagar for the treatment of constipation. Samples and literature pertaining to the Five Types of Petrolagar are available at the booth or, if physicians prefer, will be mailed on request. Physicians concerned with motion picture showings for staff meetings or classroom work will be interested to learn that several new films, approved by the American College of Surgeons, have been added to the Petrolagar library and are now available for bookings before recognized medical groups.

## S. M. A. CORPORATION, CHICAGO. BOOTH 24.

An interesting booklet on infant feeding is available to all physicians. This booklet, known as the "Physician's Handbook on Infant Feeding," includes a complete description and directions for feeding S-M-A to infants deprived of mother's milk. In addition, it embraces descriptions and uses of auxiliary preparations such as Protein S-M-A (Acidulated), Alerdex and Hypo-Allergic Milk. Ask the representative for a copy of the "Physician's Handbook on Infant Feeding" and other interesting literature pertaining to products of the S. M. A. Corporation.

## PHILIP MORRIS &amp; CO., LTD., 119 FIFTH AVE., NEW YORK. BOOTH 25.

Philip Morris & Company will demonstrate the method by which it was found that Philip Morris Cigarettes, in which diethylene glycol is used as the hygroscopic agent, are less irritating than other cigarettes. Their representative will be happy to discuss researches on this subject, and problems on the physiological effects of smoking.

## LEDERLE LABORATORIES, 225 DIERKS BLDG., KANSAS CITY. BOOTH 26.

The Lederle Laboratories booth is in charge of Mr. Long and Mr. Gilliland. See them for information on the newer pharmaceuticals (Sulfonamides, etc.), Vi-Ferrin (Liver, Iron, Thiamin Chloride), Vitamin B Complex and allergic extracts, at this time featuring Hay Fever Pollens, Poison Ivy Extract, etc. Lederle has an interesting library of medical motion picture films available to interested groups. Ask about this at booth 26.

## SHARP &amp; DOHME, PHILADELPHIA. BOOTH 27.

Sharp & Dohme have their new modern display this year featuring Delvinal Sodium, Lyovac Bee Venom Solution and other Lyovac biologicals. There also is on display a group of new biological and pharmaceutical specialties prepared by this house such as Propadrine Hydrochloride products, Rabellon, Padrophyll, Riona, Depropanex and Ribothiron. Capable, well informed representatives are on hand to welcome all visitors and furnish information on Sharp & Dohme products.

## LIBBY, MCNEILL &amp; LIBBY, UNION STOCK YARDS, CHICAGO. BOOTH 28.

You are cordially invited to visit Libby, McNeill & Libby's exhibit where attendants will point out the merits of Homogenized Baby Foods, Chopped Foods and Evaporated Milk. Libby's special Method of Homogenization makes Libby's Baby Foods extra smooth, extra easy to digest.

## THOMPSON'S NEK-EEZ CO., 5422 NEOSHO ST., ST. LOUIS. BOOTH 29.

The Thompson Nek-Eez Company will display and demonstrate how the new Nek-Eez pillow provides greater comfort for the patient who must rest or sleep in a sitting position by supporting the head at a natural angle and relieving neck strain. It is very comfortable for automobile travel also.

W. C. SCOTT & Co., 1023 GRAND AVE., KANSAS CITY. BOOTHS 30 AND 31.

McINTOSH ELECTRICAL CORPORATION, 223-233 N. CALIFORNIA AVE., CHICAGO. BOOTH 32.

In Booth 32 Mr. Paul Read will greet old friends and users of McIntosh Electrical Corporation products and will demonstrate the improved model Hogan Brevatherm with air spaced technic, induction cable facilities, electrode surgery and other methods of application; also the McIntosh Polysine Generator and the new McIntosh Sinustat, low priced galvanic and sinusoidal unit. Personal service to McIntosh patrons is the keynote of Mr. Read's success.

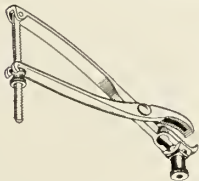
C. B. FLEET Co., 921-927 COMMERCE STREET, LYNCHBURG, VIRGINIA. BOOTH 33.

Phospho-Soda (Fleet), the buffered saline laxative which combines two U. S. P. salts of sodium phosphate in a stable concentrated solution of broader therapeutic range and is free from most of the disadvantages of saline laxatives, is being displayed.

THE C. V. MOSBY COMPANY, 3523-25 PINE STREET, ST. LOUIS. BOOTH 34.

Physicians attending the Session are cordially invited to visit the Mosby booth to inspect the new publications which are on display. Outstanding new volumes on surgery, dermatology, heart disease, ophthalmology, x-ray, obstetrics and gynecology and practice of medicine are being shown. Browse through this new material at the Mosby booth.

K & N INSTRUMENT Co., 4541 DELMAR BLVD., ST. LOUIS. BOOTH 35.



The Goodwin Bone Clamp with Drill Guide which surgeons find revolutionizes technic of open reduction of long bone fractures, reduces trauma and saves operative time will be demonstrated and the technic explained, together with a number of other new bone instruments by the J. R. Siebrandt Mfg. Co. and the K & N Instrument Co. Lepel High Frequency Laboratories, New York, will have on display all the latest models of Lepel short wave, ultraviolet and Galvanic-Sinusoidal-Faradic equipment. All physicians are cordially invited to bring their technical problems concerning physical therapy.

SCANLAN-MORRIS Co., 634 N. GRAND, ST. LOUIS. BOOTH 36.

Scanlan-Morris Company, exclusive importers and distributors of Genuine Stille Instruments, reports that they are receiving shipments of instruments regularly and that they have a reasonably large stock of instruments on hand. A representative display of Genuine Stille Instruments, Scanlan sutures, Myrick Inhalator and the University Oxygen Humidifier are exhibited. A factory representative is in attendance.

HAMILTON-SCHMIDT SURGICAL COMPANY, 215 N. 10TH ST., ST. LOUIS. BOOTH 37.

The Hamilton-Schmidt Company are showing the new Ritter Specialist Equipment Unit and Chair, the Burdick Physio-Therapy Equipment and the Stille Surgical Instruments. Physicians are invited to visit the booth and see these new items.

ABBOTT LABORATORIES, NORTH CHICAGO, ILLINOIS. BOOTH 38.

Physicians are most heartily invited to visit Booth 38 and discuss the newer specialties with the Abbott trained representatives in attendance. The wide assortment of products displayed merits close attention and study and questions are solicited. Large Volume Intravenous Solutions, Hypodermoclysis equipment, Vitamins, Arsenicals, Barbiturates including Pentothal Sodium, Pollens and many other research products are featured.

THE COCA-COLA COMPANY, ATLANTA, GA. BOOTHS 39 AND 40.

The Coca-Cola Company is serving Coca-Cola complimentary to members attending the Session.

E. R. SQUIBB & SONS, 745 FIFTH AVENUE, NEW YORK. BOOTH 41.

A number of new and interesting Vitamin, Glandular, Biological and Chemo-therapeutic Specialties are featured in the Squibb exhibit. Well informed Squibb representatives will welcome you and furnish any information desired on the products displayed.

CEROPHYL LABORATORIES, 2438 BROADWAY, KANSAS CITY. BOOTH 42.

Cerophyl Laboratories invites you to visit their booth. While Cerophyl (cereal grasses) is not new to most physicians in Missouri, it only recently has received national recognition. Representatives will explain the latest research developments in connection with the value of cereal grass in special and therapeutic diets.

JOHN WYETH & BROTHER, INC., 1600 ARCH STREET, PHILADELPHIA. BOOTH 43.

You are cordially invited to visit booth 43 where John Wyeth & Brother, Inc., will exhibit the following pharmaceutical specialties: Amphojel, Wyeth's Alumina Gel for the treatment of hyperacidity and peptic ulcer. A. B. M. C. Ointment, for the relief of arthritic pain. Alulotion Ammoniated Mercury With Kaolin, for impetigo contagiosa. Bepron, Wyeth's Beef Liver with Iron, for nutritional anemias. Bewon Elixir, the palatable appetite stimulant and vehicle. Duterra, Wyeth's vaginal lotion of kaolin and alumina. Kaomagma, Wyeth's magma of alumina and kaolin for the treatment of diarrhea and colitis. Mucara, for intestinal stasis.

STANDARD X-RAY COMPANY, 3718 WASHINGTON AVE., ST. LOUIS. BOOTH 44.

The Standard X-Ray Company will display the 100 milleampere shock proof diagnostic x-ray outfit complete with tilt table and new type wall illuminators as well as portable x-ray with diagnostic films.

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL  
MEMBERS AND DATE PLACED ON HONOR ROLL.)

#### HONOR ROLL

Chariton County Medical Society, December 2, 1940.  
Montgomery County Medical Society, December 2, 1940.  
Perry County Medical Society, December 14, 1940.  
Ste. Genevieve County Medical Society, December 17, 1940.  
Howard County Medical Society, January 2, 1941.  
Camden County Medical Society, January 7, 1941.  
Andrew County Medical Society, January 9, 1941.  
Benton County Medical Society, January 28, 1941.  
Clinton County Medical Society, February 6, 1941.  
Holt County Medical Society, February 8, 1941.  
Macon County Medical Society, February 15, 1941.  
Moniteau County Medical Society, February 15, 1941.  
Mercer County Medical Society, March 12, 1941.  
Dallas-Hickory-Polk County Medical Society, April 4, 1941.  
Miller County Medical Society, April 4, 1941.  
Morgan County Medical Society, April 5, 1941.  
Johnson County Medical Society, April 11, 1941.

ASSOCIATE EDITORS: COUNCILORS OF THE  
TEN COUNCILOR DISTRICTS

#### FIRST COUNCILOR DISTRICT

A. S. BRISTOW, PRINCETON, COUNCILOR  
Nodaway-Atchison-Gentry-Worth County  
Medical Society

The Nodaway-Atchison-Gentry-Worth County Medical Society held a dinner meeting at the Linville Hotel, Maryville, April 7, with the president, Dr. Samuel E. Simpson, Stanberry, presiding.

Members present were Drs. Francis R. Anthony, Charles T. Bell, Joseph A. Bloomer, Carlos E. Cossins, Loren E. Egley, William R. Jackson, Robert C. Person

and William M. Wallis, Jr., Maryville; Benjamin F. Byland, Burlington Junction; Joseph C. Manning, Skidmore; Charles D. Humbert, Barnard; Eugene Crowson, Pickering; Charles W. Kirk, Hopkins; John M. Davis, Claude D. Haskell, Charles H. Flynn and Clifton W. Waugh, Tarkio; Charles T. Settle and Emmett B. Settle, Rock Port; Samuel E. Simpson, Stanberry, and Pren J. Ross, Grant City. Guests present were Drs. A. S. Bristow, Princeton; O. E. Whitsell, St. Joseph; W. Logan Wood, Bolckow; Hewitt Judd, Omaha; J. L. Aldrich, Shenandoah, Iowa, and his daughter, Miss Frances Aldrich, R. N.; and three dentists, Drs. Ross Dietz, Rock Port, and Jesse Miller and R. W. Wilson, Maryville.

Dr. Hewitt Judd, Omaha, Associate Professor of Ophthalmology, University of Nebraska College of Medicine, presented an exceptionally fine lecture, illustrated with lantern slides, on "Recent Advances in Ophthalmology." Dr. Judd's excellent presentation was much appreciated by his audience. He further amplified a number of his points in response to questions from those in attendance.

Dr. A. S. Bristow, Princeton, Councilor of the First District, discussed matters of interest to the medical profession in the current legislative program of the Missouri State Assembly.

CHARLES D. HUMBERD, M.D., Secretary.

#### TENTH COUNCILOR DISTRICT

E. J. NIENSTEDT, SIKESTON, COUNCILOR

Cape Girardeau County Medical Society

The Cape Girardeau County Medical Society met at the Colonial Tavern, Cape Girardeau, January 13, at 8:00 p. m. Dr. C. A. W. Zimmermann, Cape Girardeau, presided.

The following members were present: Drs. C. A. W. Zimmermann, W. F. Oehler, C. T. Herbert, G. J. Tygett, F. W. Hall, R. A. Ritter, D. B. Elrod, M. H. Shelby, Cape Girardeau; A. M. Estes, D. I. L. Seabaugh, T. E. Ruff, E. R. Schoen, D. G. Siebert, Jackson; Edward Crites, Sedgewickville.

The program committee was instructed to investigate and review a motion picture film sponsored by the American College of Pediatrics with the view of showing it before the Society.

Mrs. Myrtle Pangburn, of the State Social Security Commission, and Mr. Louis Schrader, clerk of the County Court, appeared in behalf of a project to organize a clinic for the treatment of the indigent of the county. The project has the backing of the County Court for a certain amount of money. Mrs. Pangburn desired to discuss with the Society how best to use this money in order to get the most good of it and also to solicit the cooperation of the Society in the operation of such an agency. She expressed her thanks for the enthusiastic welcome and support she had received in her daily efforts to help the needy in the county. She promised to use every effort to see that the physicians were protected, not imposed upon and to distribute the work so that no one would be called upon to do more than his equal share. The following questions were taken up at a round table discussion: location of the clinic; that cooperation of physicians would prevent many cases from becoming emergencies; that many cases could be treated at the clinic thereby saving money for other cases that need hospitalization; that the cost of prescriptions be submitted to a committee of druggists as to the fairness of the charge thereon; the number of days per week and number of hours per day necessary to run the clinic; the best method of handling cases from other points in the county.

Mr. Schrader suggested that patients over the county have the same benefits as those of Cape Girardeau. Dr. A. M. Estes, Jackson, suggested that it would be

better to transport patients from other points to Cape Girardeau.

It was thought that Monday, Wednesday and Friday would be the best days to operate the clinic and that the hours should be decided later. A plan would be made to repay the physician for cat gut, dressings and other supplies that he might furnish. It was suggested that eye, ear, nose and throat cases be sent to the offices of the physicians doing this special work where they had special equipment.

Drs. C. T. Herbert, R. A. Ritter, F. W. Hall, J. H. Cochran, W. F. Oehler, Cape Girardeau, and A. M. Estes, Jackson, were appointed a committee to investigate the plan and lay out a method of procedure and report to the Society for further discussion and final action.

The following committees were appointed: Program, Drs. W. F. Oehler, W. H. Wescoat, G. A. Reynolds and C. T. Herbert, Cape Girardeau; Cancer, Drs. D. B. Elrod, F. W. Hall, H. V. Ashley, Cape Girardeau; Tuberculosis, Drs. R. A. Ritter, T. E. Ruff, V. H. Karpass, Cape Girardeau; Public Policy, Drs. J. H. Cochran, G. J. Tygett, P. B. Nussbaum, Cape Girardeau; Economics, Drs. D. I. L. Seabaugh, A. M. Estes, E. R. Schoen, Jackson; Necrology, Drs. M. H. Shelby, C. T. Herbert, Cape Girardeau, D. I. L. Seabaugh, Jackson.

### Meeting of February 10

The Cape Girardeau County Medical Society met February 10 at the Colonial Tavern, Cape Girardeau, for a dinner meeting.

The following members and guests were present: Drs. C. A. W. Zimmermann, Cape Girardeau, President; T. K. Brown and H. P. Lattuada, St. Louis; Harry Phillips, Anna, Illinois; S. M. Sarno, Morehouse; W. L. Digges, New Madrid; Edward Crites, Sedgewickville; W. W. Ford, Gordonville; V. H. Karpass, P. B. Nussbaum, O. L. Seabaugh, R. A. Ritter, D. B. Elrod, W. F. Oehler, G. A. Reynolds, J. H. Cochran, M. H. Shelby, Cape Girardeau; A. M. Estes, E. R. Schoen, Jackson.

Dr. T. K. Brown, St. Louis, spoke on "Puerperal Infection" and illustrated his lecture with lantern slides. Discussion followed this interesting discourse.

M. H. SHELBY, M.D., Secretary.

### Dunklin County Medical Society

The Dunklin County Medical Society met on February 20.

The following officers were elected: President, Dr. Homer Beall, Malden; vice president, Dr. Van H. Bond, Hornersville; secretary-treasurer, Dr. Loys C. Wilson, Kennett; delegate, Dr. E. L. Spence, Kennett; censors, Drs. S. E. Mitchell, Malden (one year), Paul Baldwin, Kennett (two years), G. R. Presnell, Kennett (three years).

L. C. WILSON, M.D., Secretary.

### St. Francois-Iron-Madison-Washington-Reynolds County Medical Society

The St. Francois-Iron-Madison-Washington-Reynolds County Medical Society met at the St. Francois County Courthouse, Farmington, March 28, at 7:30 p. m.

Dr. Carl F. Vohs, St. Louis, gave an interesting discussion on "Medical Economics, Especially Relating to the Farm Security Administration and Community Health League."

Miss Esther Upton, Farmington, of the W. P. A. House-keeping Aid Project, enumerated the services that they were able to give needy families in case of illness or emergencies.

Mr. Ray F. McCarthy, St. Louis, Executive Director, Group Hospital Service, gave an interesting discussion on "Medical Economics."

The following were present: Mr. Ray F. McCarthy, St. Louis; Misses Esther Upton and Evans, Farmington; Drs. Carl F. Vohs, St. Louis; C. H. Appleberry, Flat River; Reuben Appleberry, F. R. Crouch, G. Tivis Graves, Farmington; Marvin Haw, Van W. Taylor, Bonne Terre; E. E. Higdon, Fredericktown; J. W. Hunt, Leadwood; J. L. Thurman, Potosi.

G. TIVIS GRAVES, M.D., Secretary.

## WOMAN'S AUXILIARY

### WOMAN'S AUXILIARY TO THE MISSOURI STATE MEDICAL ASSOCIATION

President, Mrs. Stanley P. Howard, Jefferson City.  
President-Elect, Mrs. J. J. Drace, Chillicothe.  
Adviser, Dr. Herbert L. Mantz, Kansas City.

### PROGRAM

Monday, April 28

- 2:00 p. m. Choice of tours.  
Tour of places of interest in St. Louis.  
Tour of Shaws Garden.  
Tour and tea at Leslie Bates Davis Neighborhood House, East St. Louis.  
7:00 p. m. Annual Banquet of the Missouri State Medical Association.  
Dr. Morris Fishbein, Chicago, "American Medicine Prepared."

Tuesday, April 29

- 9:00 a. m. Registration. Coronado Hotel.  
10:00 a. m. Meeting of Executive Board. Coronado Hotel. Mrs. Stanley P. Howard, Jefferson City, Presiding.  
1:00 p. m. Luncheon. Glen Echo Country Club.  
Guest speaker: Dr. Samuel A. Cosgrove, Jersey City, "Maternal Welfare."  
Guests: Dr. Cyrus E. Burford, St. Louis; Dr. R. B. Denny, Creve Coeur; Dr. Herbert L. Mantz, Kansas City; Dr. Joseph C. Peden, St. Louis.  
6:30 p. m. Buffet Supper and entertainment. St. Louis Medical Society Building. St. Louis Medical Society Auxiliary, Hostess.

Wednesday, April 30.

- 8:30 a. m. Registration. Coronado Hotel.  
9:00 a. m. General Business Meeting. Coronado Hotel.  
1:00 p. m. Annual Auxiliary Luncheon. Coronado Hotel.  
Guest Speaker: Dr. Harriet S. Cory, St. Louis, "Social Hygiene and National Defense."  
3:00 p. m. Post-Convention Board Meeting. Mrs. J. J. Drace, Cape Girardeau, Presiding.

The Woman's Auxiliary sponsored the eighth annual essay contest for pupils of junior and senior high schools in Missouri this year. The subject of the essay was "Conservation of Eyesight." Prizes in the contest were won as follows: first prize of \$25.00, Allegra Daume, Jackson; second prize of \$15.00, Jean Heerwald, Concordia; third prize of \$10.00, Marilyn Wood, Kansas City. Ten prizes of \$1.00 each were won by Betty Jones, Jackson; Art Marx, Robert Van Der Maaten, Barbara Thorp, Springfield; Margery Wolfson, Martha Peterson, William Troup, Kansas City; Martha Jean Amos, Mary Gibson, Odessa; Katherine Chamblin, Higginsville.

## MISCELLANY

### 1941 LEGISLATION

The following bill was introduced into the House of Representatives on March 26:

HOUSE BILL NO. 495  
61st General Assembly

Introduced by Mr. Still

Read 1st time March 26, 1941, and 650 copies ordered printed.

Jos. A. Bauer, Chief Clerk.

#### An Act

To amend Article II, Chapter 4, Revised Statutes of Missouri, 1939, relating to "Construction of Statutes," by adding a new Section to said Article to be known as Section 656 A, providing for the statutory construction and definition of the word "physician" and the word "surgeon," (including the derivatives and contractions of either of said words,) used in any Missouri Statutes relating to professional personal services rendered or to be rendered professionally in practicing the healing art and in performing public health, safety, and sanitation services and precautions.

Be it enacted by the General Assembly of the State of Missouri, as follows:

Section 1. That Article II, Chapter 4, Revised Statutes of Missouri, 1939, relating to "Construction of Statutes," be, and the same is hereby amended by adding a new Section to said Article to be known as Section 656 A, providing for the Statutory Construction and definition of the word "physician" and the word "surgeon," (including the derivatives and contractions of either of said words,) used in any Missouri Statute relating to professional personal services rendered or to be rendered professionally in practicing the healing art and in performing public health, safety, and sanitation services and precautions, so that said Article and Chapter, when so amended, shall read as follows, immediately following the provisions of Section 656:

Section 656 A. The word "physician" and the word "surgeon," (including the derivatives and contractions of either of said words,) used in any Missouri Statute, are not there used in any sense permitting the words to be construed by any person or persons to include a legislative intent to regard with favor or preference, or to necessitate professional physical examination, or professional treatment, or professional public health measures and precautions by a doctor practicing the healing art pursuant to the provisions of Chapter 59, Article 1, Revised Statutes of Missouri, 1939, to the exclusion or rejection of professional physical examination, or professional treatment, or professional public health measures and precautions, by a doctor practicing the healing art pursuant to the provisions of Chapter 62, Article 1, Revised Statutes of Missouri, 1939:

Provided further, that the word "physician" and the word "surgeon," (including the derivatives and contractions of said words,) used in any Missouri Statute other than their use in Article 1 of Chapter 59, Revised Statutes of Missouri, 1939, and Article 1, Chapter 62, Revised Statutes of Missouri, 1939, shall be construed by all persons as a legislative intent to include the practitioners of any school of medicine recognized by the laws of Missouri, including the practitioner of any Osteopathic school of medicine recognized by the laws of Missouri, as being endowed with definite privileges, rights and duties, as follows: To practice as doctors their respective arts of healing by giving physical ex-

aminations and by prescribing remedies and treating diseases of the human mind and body, according to the course of study and training as taught under the curriculum of their respective accredited schools, and thereby endeavor to alleviate diseases and pain of any patient, including the privilege, right and duty to practice their respective healing arts in all hospitals or institutions built or maintained by revenue derived from public taxes; To practice as doctors their respective healing arts by rendering public health, public safety, and public sanitation services and public precautionary measures sanctioned by any Act of Congress or sanctioned by any Missouri Statute.

This bill was referred to the Committee on Public Health.

The following House bills were introduced on February 27:

House Bill No. 192 (formerly H. B. No. 62). Prohibiting the taking of examinations to practice any branch of the healing art except after examination in the Basic Sciences, Anatomy, Physiology, Chemistry, Bacteriology and Pathology by a state board of examiners.

No hearing has been held on this bill.

House Bill No. 193 (formerly H. B. No. 62). Prohibiting the use by any person licensed to practice medicine, surgery, dentistry, optometry, osteopathy, chiropractic, chiropody or veterinary surgery, or any two or more of such professions, and any person permitted to practice the curing, healing or remedying of ailments, defects or diseases of body or mind, from using the prefix "Doctor" or "Dr." in connection with his name in any letter, business card, advertisement, prescription blank, sign or public listing or display without affixing thereto suitable words or letters designating the degree held and representing the profession he is authorized to practice, making violation of the Act a misdemeanor and fixing the punishment therefor, and providing that the Act shall not apply to the use of said designation by doctors of letters, doctors of science, doctors of law, doctors of divinity, or doctors of philosophy not practicing the curing, healing or remedying of bodily or mental ailments, defects or diseases.

This bill was passed. It was amended to exempt any person holding any honorary academic degree granted by any recognized school, college or university.

House Bill No. 194 (formerly H. B. No. 67). Amending Section 9983, Article 1, Chapter 59, of the Revised Statutes of Missouri, 1939, relating to the examination and qualifications of applicants to practice medicine or surgery in this state by omitting the period after the word "equivalent" in line 15 of said Section and by inserting at the end of said line the following: "and satisfactory evidence of completion of premedical education consisting of a minimum of 60 semester hours of college credit in acceptable subjects from a reputable college or university approved by said Board."

This bill was passed by the House on April 16.

House Bill No. 201 (formerly H. B. No. 64). Requiring every person licensed to practice medicine or surgery in this State to register biennially with the State Board of Health, providing for the method of application and the fees for such registration, the issuance of certificates of registration, and display of the same, requiring the State Board of Health to be notified of changes in the location of the registrant's office, requiring retired licensed practitioners of medicine and surgery to file affidavits with the State Board of Health in lieu of annual registration, providing for the disposal of registration fees and penalties for failure to register. (Registration fee \$1.00 per biennium.)

This bill was passed by the House on April 17.

House Bill No. 202 (formerly H. B. No. 63). Declaring that the practice of medicine or surgery by unlicensed persons or the doing, committing or continuing of acts

prohibited by Section 9988, Revised Statutes of Missouri, 1939, is inimical to public health and constitutes a public nuisance and also authorizing Circuit Court injunction proceedings by the Attorney General, Circuit or Prosecuting Attorneys in the name of the State or by the State Board of Health in its own name to enjoin such practice or attempted practice and such acts or attempted acts; prescribing the venue, practice and procedure in such actions; providing that such injunction may issue without proof of present or future damage; prohibiting temporary injunctions pursuant to this Act; and providing that such proceedings under this Act are in addition to and not in lieu of proceedings to revoke licenses to practice medicine and surgery or criminal proceedings against and punishment of such persons.

Committee recommended do not pass on April 16.

Senate Bill No. 15. Introduced by Senator Allen McReynolds, Carthage. To further the control of congenital syphilis by requiring a serological blood test for syphilis in pregnant women, requiring the filling out of reports to the State Department of Health, setting up supervisions necessary to protect the health of the mother and child, and provide a penalty for failure or refusal to observe the law.

The committee recommended this bill do pass on March 26. It is on Informal Calendar for passage.

Senate Bill No. 37. Introduced by Senator Michael Kinney, St. Louis. Providing for medical examination for venereal diseases of applicants for a marriage license and providing rules and regulations by the State Board of Health.

This bill was referred to the Committee on Public Health on February 20.

Senate Bill No. 7 was passed by the Senate. This bill provides for liens in favor of public and charity supported private hospitals, clinics and other institutions for the care of the sick, furnishing care, treatment and maintenance to persons injured by the negligence or wrongful act of others, upon the rights of action, claims or demands of such injured person against the persons causing such injury, for damage on account of such injury, and upon the proceeds of any settlement of any such right of action, claim or demand; and providing for notice of and the enforcement of such liens.

The Judiciary Committee of the House reported do pass on the bill with three amendments on April 16.

## CORRESPONDENCE

### AGE LIMIT FOR PUBLIC HEALTH OFFICERS RAISED

The State Board of Health of Missouri  
City of Jefferson

April 8, 1941

To the Editor:

Calls into military and naval service are causing vacancies among the medical personnel of the State Health Department. To meet this emergency the Missouri State Board of Health has raised the age limit from 30 to 45 years for medical officers first entering the field of public health. The training program for such new officers will be continued to be carried out by the granting of fellowships including stipends for postgraduate studies in schools of public health.

Very truly yours,

JOHN W. WILLIAMS, JR., M.D., M.P.H.,  
Director of the Division.

By the direction of

HARRY F. PARKER, M.D.,  
State Health Commissioner.

## BOOK REVIEWS

FUNDAMENTALS OF NUTRITION. By Estelle E. Hawley, Ph.D., and Esther E. Maurer-Mast, M.D., University of Rochester, School of Medicine and Dentistry, Rochester, New York. Including Table of 100-Calorie Portions by Estelle E. Hawley, Esther E. Maurer-Mast and Herbert F. Van Epps, The Department of Vital Economics, University of Rochester, and Discussions of the Dietary Management in Specific Conditions, by collaborators associated or formerly associated with the University of Rochester, School of Medicine and Dentistry. With a foreword by John R. Murlin, Ph.D., Sc.D., Professor of Physiology and Director of the Department of Vital Economics, University of Rochester. Springfield, Illinois, Baltimore, Maryland: Charles C. Thomas. 1940. Price \$5.00.

Estelle Hawley and Esther Maurer-Mast have collaborated with twenty physicians associated with them at the University of Rochester School of Medicine to produce a textbook on nutrition. The first sixty-five pages deal with the fundamental principles related to metabolic processes. This is followed by articles dealing with the diets for specific diseases. The next 168 pages present tables useful in the calculation of the diet. Unfortunately food context is on the basis of the 100 calorie portion necessitating needless interpretation on the part of a physician to calculate a particular diet.

The tables emphasize the wide gaps in knowledge of the qualitative composition of food, both in vitamin and mineral content. Before there is wider utilization of commercial vitamin preparations it appears of the utmost importance that further analysis fill in these gaps.

B. Y. G.

FETAL AND NEONATAL DEATH. A Survey of the Incidence, Etiology, and Anatomic Manifestations of the Conditions Producing Death of the Fetus in Utero and the Infant in the Early Days of Life. By Edith L. Potter, M.D., Ph.D., Instructor in the Department of Obstetrics and Gynecology, The University of Chicago, Pathologist at The Chicago Lying-in Hospital, and Fred L. Adair, M.D., Professor and Chairman of the Department of Obstetrics and Gynecology, The University of Chicago, and the Chicago Lying-in Hospital. Chicago, Illinois: The University of Chicago Press. 1940. Price \$1.50.

The authors estimate that approximately two-fifths of the fetal and neonatal deaths might be avoided by the general application of knowledge now possessed by the profession. The causes which may be considered preventable are prematurity, birth injury, anoxemia, infection and exposure to unfavorable conditions immediately after birth. The authors investigate these problems from the point of view of incidence, etiology and anatomic manifestations.

The first chapter concerns itself chiefly with statistics regarding births, stillbirths and infant mortality.

The second chapter is concerned with establishing the picture of the normal fetus and infant. In this chapter are found facts of considerable interest and usefulness. Of particular interest is the part devoted to the normal gross and microscopic appearance of the principal organs of the body. This discussion is concise and to the point.

The third chapter discusses the technic of the post-mortem examination and the following chapter consists of a survey of the principal causes of fetal and neonatal death. The last chapter is devoted to special pathology.

The illustrations throughout are clear and an adequate bibliography follows each chapter. The book is well bound and the print is easily read.

This small volume can be recommended to doctors, interns and students as an excellent source of information concerning fetal and neonatal death, especially as it pertains to the normal and pathologic findings.

J. H. H.

#### MODERN DRUG ENCYCLOPEDIA AND THERAPEUTIC GUIDE.

By Jacob Gutman, M.D., Phar.D., F.A.C.P., Director, Brooklyn Diagnostic Institute; Consulting Physician, Manhattan General Hospital, New York, etc. For the use of Physicians, Dentists, Pharmacists and Medical Students. New York: New Modern Drugs. 1941. Price \$7.00.

In this, the second edition, the author has incorporated all the therapeutic advancements since publication of the first edition in 1934. The greatest additions naturally have been in the field of endocrinology, vitamin therapy and chemotherapy. The author has faithfully maintained his original endeavor to present without favoritism or discrimination all the nonofficial products, proprietary, patented, Council Accepted and others, that are popular with the medical profession. In all 11,114 modern ethical medicinal preparations are presented in 15,629 forms. The preparations are presented in alphabetical order as popular proprietary drugs, drugs for external use, endocrine preparations, hyperdermic medicaments, biologicals and allergens.

Also included is a distributors' and manufacturers' index listing under each name all of their preparations. The therapeutic index constitutes four sections in which the first is devoted to the listing of the drugs under their therapeutic capabilities, the second as to their pharmacologic activities, the third as to their chemical classifications and the fourth as to their habit forming or potentially dangerous properties. Finally, there is a complete drug and general index to facilitate the finding of any of the drugs listed in the preceding sections. "Modern Drug Encyclopedia and Therapeutic Guide," due to its thoroughness and inclusiveness, is a valuable adjunct to any general practitioner's library, as well as to any medical or pharmacologic library.

W. P. B.

**DISEASES OF THE FOOT.** By Emil D. W. Hauser, M.S., M.D., Assistant Professor of Bone and Joint Surgery, Northwestern University Medical School; Attending Orthopedic Surgeon, Passavant Memorial Hospital, Chicago. With a Foreword by Sumner L. Koch, M.D., with 263 illustrations on 172 figures, some of them in colors. Philadelphia and London: W. B. Saunders Company. 1939. Price \$6.00.

This book would be a valuable addition to the library of the general practitioner as it is plainly and simply written, is well within his ken and is supplied with good illustrations and roentgenographs. It would add little to the knowledge of the orthopedist so far as orthopedic conditions are concerned but chapters, such as the ones on circulatory disturbances of the foot and on specific diseases of the foot and ankle, contain valuable information for everyone.

The object of the book is not to impart surgical technic to the reader as this is discussed briefly, but to acquaint one with common disturbances of the foot, their diagnoses and treatment by other than surgical procedures. The involved operative maneuvers on the foot are left to more complete texts but minor work, such as ingrown toenails, calluses, amputation of toes, is well enough described to enable the procedures to be followed.

The anatomy, embryology and physiology of the foot are discussed briefly. Examination of the foot and how it is carried out is an important chapter. There is an interesting and important chapter dealing with the hygiene and care of the feet of children and adults including discussion and illustration of acceptable types of shoes.

Chapters 5 through 11 deal with dysfunctions and malformations of the feet including flat feet, orthopedic conditions of the toes such as hallux vagus, hammer toe, hallux rigidus, hallux varus, orthopedic conditions of the accessory bones of the feet, disturbances of the heel such as calcaneal spur, periostitis, bursitis, apophysitis, arthrosis and clubfoot.

Discussion of circulatory disturbances of the feet and their treatment includes such conditions as chilblain, trench foot, thrombo-angiitis obliterans, gangrene, endarteritis, periarteritis nodosa, varicosities and thrombophlebitis.

Traumatisms to the foot and ankle including fractures, sprains and strains are discussed but the reduction of fractures and their treatment are not discussed in great detail but bandaging and strapping technic for sprains and strains is presented.

Specific afflictions such as acute bone atrophy, Kohlers disease and Freibergs disease are discussed briefly. Nerve involvement affecting the foot including such conditions as metatarsalgia, causalgia, plantar neuritis, sciatic neuralgia and changes in the foot due to anterior poliomyelitis is discussed. Discussion of diseases of the bones and joints of the feet includes syphilis, tuberculosis, osteomyelitis, gout and pyogenic infections and discussion of infections of the foot includes paronychia, lymphangitis and infected bursae.

Tumors are discussed briefly and many of them are merely named. The skin diseases are more fully discussed and the treatment of ingrown toenail, corns and calluses is well outlined.

Three chapters dealing with technic are important and interesting. The technic of local anesthesia is outlined for various operative procedures, the technic of special types of bandages and strapping and the application of plaster and Unna boots are fully described. The technic for manipulations of the foot as in clubfoot is described.

The final chapter is devoted to a description and brief discussion of orthopedic appliances for the foot such as splints and braces.

W. B.

#### TELLS OF A HITHERTO UNDESCRIBED FORM OF LUNG DISEASE IN NEWBORN INFANTS

What he terms a hitherto undescribed form of epidemic lung disease occurring in newborn infants is described in *The Journal of the American Medical Association* for March 8 by John M. Adams, M.D., Minneapolis.

The disease appeared in epidemic form with 32 cases during January, February and March, 1937. There were 9 deaths. The disease, Dr. Adams says, was a virus infection similar to influenza, but he ruled out influenza as ferrets inoculated with fresh material from the patients failed to generate neutralizing bodies against the influenza virus. Further evidence that the epidemic infection was a virus disease was indicated by its extreme contagiousness, its distinctive symptoms (cough, low grade fever, labored breathing and skin blueness), characteristic lung and blood changes and the failure of investigators (Minnesota State Board of Health) to identify the causative bacterium.

"Several recent reports of 'atypical pneumonia,'" the author points out, "indicate that the recognition of viruses as possible causes of pulmonary [lung] disease is no longer limited to epidemic influenza. Much further study and classification of such disease is obviously needed at the present time. The ubiquity of the viruses must put physicians on guard for similar outbreaks of infection of the respiratory tract in infants."

The conviction that the disease was due to a virus is further borne out, Dr. Adams says, by the fact that the mortality was 100 per cent in the premature infants affected. Newborn infants have a short immunity to other than virus diseases.

# THE JOURNAL

OF THE

## Missouri State Medical Association

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### THE IDEALS OF MEDICAL PRACTICE

ADDRESS OF THE PRESIDENT

C. E. BURFORD, M.D.

ST. LOUIS

It has been a great honor and a rare privilege to have served as the presiding officer of the Missouri State Medical Association and as host conjointly with the St. Louis Medical Society in this Eighty-Fourth Annual Session and "home-coming" after an absence of fifteen years.

It is now twelve months according to the calendar since the last Annual Session, but if time were measured by the transpiration of state, national and world events much of a lifetime has passed since the last meeting.

There has been a reelection of the President of the United States. The people of Missouri have attempted to elect a new Governor. The Missouri State Legislature has met in its biennial session and is still in session after three and a half months. The prosecution of the American Medical Association and its officers by the Government under the Anti-Trust laws, the rapid extension of the World War, the drafting of a large army, the building of many cantonments, the feverish preparation of defense and war material and weapons, the building of a great navy and the call of many of our members to Government service have occurred; next to war itself there probably have never been so many important things transpire in so short a time in the history of this state.

In the face of these epochal events I am happy to know that the physicians of the organized medical profession with few exceptions have stood back of their leaders, have more than met their obligations and have continued to serve their communities and their country in a manner which shows the giving of science and soul in the eradication of disease and the healing of the sick.

Councillors in the ten Councillor Districts are better organized and are more active than ever

before. No one man has been more effective in this organizing process or has devoted his energies more unselfishly than the Chairman of the Council, Dr. Curtis H. Lohr, St. Louis. His knowledge of men, his sound judgment and sense of justice have won for him the esteem of the members and my admiration.

The Public Policy Committee, so well captained by Dr. Morris B. Simpson, Kansas City, has had unusually heavy duties to perform during this legislative year and whatever may be the outcome of medical legislation at this assembly, the officers know that this Committee has worked untiringly and effectively in a most difficult field.

The Committee on Scientific Work, with Dr. J. E. Stowers, Kansas City, Chairman, has continued its splendid work of giving better scientific programs with guest speakers who have no superiors in their specialties in the American Medical Association.

The Publication Committee, led by Dr. Walter Baumgarten, St. Louis, Chairman, has been able to show the results of its labors in the steady improvement in appearance and subject matter of THE JOURNAL.

If it were possible I would be pleased to mention each standing and special committee but their reports have been presented for approval and the success of the Association is due to their most effective services. One other committee, however, must have special mention, for if its task is difficult and not always appreciated, it has been most willingly and efficiently performed. Dr. Charles E. Hyndman, St. Louis, Chairman, and the Committee on Defense deserve a vote of thanks from every member of this assembly.

Since the last Annual Session, the Association has lost one of its most valuable and widely known official members, Secretary-Editor Emeritus, Dr. Edward J. Goodwin. He not only made a place for himself in the Missouri State Medical Association and the American Medical Association but in so doing he placed the profession on a higher level by his rare ability as an editor and organizer.

The active work of the Executive Secretary has been carried out by one well trained for its duties,

and had it not been for the able and willing help of Mr. E. H. Bartelsmeyer, St. Louis, your President would have been a patient instead of a physician.

The most heartening impression coming to me from the year's work is the general spirit of fact finding, of inquiry into the best means and methods of advancing medicine in the state, which has been followed by a cooperative effort worthy of the members.

Missouri laws must be revised and new ones passed to bring Missouri statutes to a par with those of other leading states in matters of public health and the healing art. Education of the voters is the ideal method but it is too slow, requiring a generation at best, leaving only legislation as the practical method of accomplishing this laudable end. A worthy and I believe a well directed preparation and effort has been made the last two years which has brought forth a measure of success. The profession is not discouraged by some failures but made stronger in the determination to continue efforts until success is attained.

Nationally, the medical profession is placed in a most awkward and undesirable position of being asked to defend a freedom which is being denied it as an organization by our Government which is attempting to regiment the profession's relationships, control its ethics, limit its standards of professional conduct and at the same time admitting that it could not impose these regulations on labor unions.

To this the profession cannot submit with complacency. Physicians know better than anyone else that the imposition of these artificial regulations on the profession has resulted in disaster and disillusionment to the public for whom it has been so enticingly urged.

With this knowledge the profession would be recant to its trust and false to itself if it did not oppose this oppression by every just force known to a democracy of which physicians are an important part.

While each is giving the very best that is in him, as each has done and will do, in preparation for defense or participation in war, the profession must not lose sight of this unity of purpose, this freedom of the medical profession to fulfill its God given trust to prevent disease and to give the best care to sick and suffering humanity that medical science has disclosed.

When history is written and the books are closed I have an abiding faith it will not be recorded that battles were lost because the physicians failed, that epidemics decimated the ranks because the medical officers were careless, that the wounded suffered while the surgeons slept or that the poor died while the physicians waited for their pay. This is contrary to all history, and history repeats itself.

When duty calls, the physician goes. He prefers going to the bedside of the sick which is his accustomed place. The profession's worthy leaders have shown that duty may call physicians to strange

places, to public rostrums, to political platforms and to pulpits and court rooms to plead the cause of truth in the application of medical science to the care of human lives. My knowledge of the organized medical profession of the State of Missouri assures me of its ability and purpose to cherish its lofty ideals and fulfill its sacred duties.

The great hope for the medical fraternity in the future may be its dual relationship to society. The practitioner of medicine in final analysis deals with the individual. He has a general interest in disease, in society and spiritual values, but his particular interest, his life devotion, is in the individual.

It is true that this concentration on a single life includes all that has gone before; it includes all that has moulded the physical development, all that has shaped the personality as well as the immediate disability which brings him to the doctor. The other side of the medical profession's dual relationship to society is the universality of its interest and influence. The art and science of medicine knows no classes, no races, no nations, no creeds.

In a war torn world, full of jealousies and hatreds, every true physician has the closest fraternal interest in the welfare and accomplishments of every scientific physician in every nation on this earth.

It is because of the free gift to humanity of the scientific accomplishments of the medical profession from every nation that medicine has advanced so rapidly during the last twenty years. Is it unreasonable to hope that this community of effort and interest, this true fraternal feeling between the physicians from all nations may prove to be the golden thread that will hold together the tattered and torn fabric of civilization?

The necessity of going over the state and to neighbor states, the privilege of meeting physicians in their home environments and sharing their problems and feeling their cooperation for the good of the whole profession is an exhilarating experience. It renews one's faith in the profession. For the first time, at least in this generation, the medical profession is organizing for a common defense against outside influences that would disrupt the present system of practice which has proven itself superior to all other tried systems. That certain changes will take place in a rapidly changing world seems certain.

Can we, as a group, practice a compromise system of medicine and hold to the lofty ideals which have been our guiding stars? Can we still keep ever uppermost the welfare of the individual patient? One speaks today of machines, speed, horsepower, billions of dollars. Governments, Nations, world-wide movements, races, creeds, navies, armies, total wars. Does anyone remember the individual human beings, the only things with consciences, the only creatures with souls? Yes, I think the physician does.

When all others are engrossed in movements, methods and means, let physicians hold to their one ideal and continue to minister to the sick and

wounded of God's creatures to the end that the life, health, liberty and happiness that this generation has enjoyed be preserved for future generations.

958 Arcade Building.

## WE LIVE TO SERVE AND NOT SERVE TO LIVE

ADDRESS OF THE PRESIDENT-ELECT

R. B. DENNY, M.D.

CREVE COEUR, MO.

It is with great pleasure and yet with a feeling of sincere appreciation of the responsibilities of the office of the President of the Missouri State Medical Association that I, on this occasion, greet you as a body at this Annual Session.

Today, as never before in the history of medicine, has a group of men met in convention when a more chaotic condition exists in this country and the world at large.

Let me review briefly the history of the medical profession as it has gone along with the progress of the Nation.

No body of men ever has been as intricate a part of the development and welfare of a nation as the practicing physicians. As the early pioneers settled in the various sections of the country and developed it, and as they made progress, the thing that stood ever in their way was disease, illness, epidemics, by reason of climatic and sectional and various existing conditions.

Would it have been possible for this country to progress under those existing circumstances without the physicians who, through their untiring efforts, gave all including, many times, their own lives in stamping out those dreaded diseases as this country progressed?

Great cities sprang up, industrial and financial institutions flourished, mass production became predominant and, in order to aid in these developments, the physicians stood their ground, establishing hospitals and laboratories and doing all to erase sickness and disease and aid in these projects.

Those engaged in gainful occupations reaped the harvest of financial rewards, while the harvest of the physician was not of the pecuniary rewards but of welfare of humanity and society.

This country has developed into one of the richest and most powerful in the world and the physician throughout the years has been her helpmate, through his efforts making it a healthful and livable land.

What are the rewards?

Is it not true that in place of enjoying the fruits of its services the profession must fight those who would make inroads upon it and take their places in it and enjoy the privileges to which the medical

profession alone is entitled; namely, the cults who through the decades of development and sacrifice were never thought of, heard of or known of?

Not only must the profession guard against those attempting to make inroads upon it, but it has been made a victim of a legal action by the Government in a suit to declare the medical profession a trust.

In addition to this, there are those in the political world who would endeavor to take from the physician his sacred rights, privileges and standards—by attempting to enact legislation in the form of state medicine.

Now that the great war clouds are hovering over all of Europe and this country is in the midst of a great preparedness program—what is the medical profession doing in this respect? Is it demanding great prices for medical services, for institutional services, is it calling strikes, walkouts? No! It is giving all. Some of the best physicians are leaving for governmental service and institutions are at the command of the country.

The heritage of the medical profession is noble. It is always willing to serve, protect and guard those principles and ideals for which those who went before gave all that this Nation might be the Nation it is today.

The profession is giving all, it is at the people's command.

The Association has always stood ready to serve and render what aid it could to any organization whose main purposes were to better health conditions in this state and make this a better place in which to live. There is now in existence in this state an organization known as The Community Health League of Missouri. Its aims and purposes are high and noble. Physicians should give this organization all the aid possible. "We live to serve"; now let us serve this group. Let us not only give it a place on our programs but let us assist with financial help.

I fear the medical organizations throughout the country have not given enough thought to politics. I do not mean partisan politics. Every member should become acquainted with senators and representatives in Congress and the members of the State Legislature. They should be invited occasionally to Society meetings and given a place on the programs. In this way they will see what noble work medical organizations are doing and, then, when state medicine is proposed in the legislative hall it properly will receive no support. Also, judges throughout the United States soon will see there is no illegitimate work being done by the American Medical Association.

There are in Missouri about 5,500 licensed physicians. Membership in the state organization is 3,303. I want the delegates, presidents and secretaries who are attending this session, on their return home, to begin a campaign to enroll all eligible licensed physicians in their city or county to membership in their county society. Let us serve this

Association. Let us get all physicians into membership in this Association and be ready to serve our country in this preparedness program.

We live to serve and not serve to live.

## PRACTICAL POINTS IN MEETING THE POOR SURGICAL AND ANESTHETIC RISKS

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The greater portion of this subject will be presented in outline form and some of the newer developments in physiologic chemistry which are making surgery safer for the patient will be covered. These observations were developed from a study of the literature and the practical application of these studies in my practice.

In approaching the poor surgical risk, from the viewpoint of the surgeon, the anesthetist, the internist and the patient, the patient's best interest sometimes may justify proceeding on an apparent poor surgical risk and vice versa. I will outline briefly the most common types of impairment.

1. *The Patient With Impaired Heart* (with particular emphasis upon impairment of heart muscle).—A heart muscle which allows the patient to carry on the usual activities incident to his job is usually competent enough for surgical risk if properly prepared. Even decompensation or old coronary involvement need not deter the surgeon from an operation which will prolong the patient's life or make his existence more comfortable if proper preparation with bed rest, digitalis, proteins, diuretics and employment of a careful medically trained anesthetist are allowed. Careful surgery and careful anesthesia go hand in hand.

Henderson's breath holding test is one in which the patient lies down for fifteen minutes, the nose is pinched at the end of a normal expiration and respiration suspended with mouth closed until patient is forced to breathe. Ability to hold the breath for from twenty-five to thirty-five seconds is considered normal. Decrease of this time is considered due to acidosis, cardiac, respiratory or blood impairment.

2. *The Patient With Arteriosclerosis*.—Whether the most marked pathological condition be in the brain with senility, the aorta with atherosclerosis or the kidneys with impaired function and hypertension, one must first decide whether the patient has anything to gain by the proposed surgery.

3. *The Patient With Impaired Kidney*.—(a) Nephritis: Marked nitrogenous retention in the blood certainly does not indicate a proper surgical risk. (b) Infection: Urinary obstruction caused by prostatitis with ascending infection and nitrogen retention demands surgery after decompression and the return of blood chemistry to normal. (c) Neoplasm: Neoplasm which has progressed to the point

of nitrogen retention or metastasis is of course not operable.

4. *The Patient With Impaired Liver*.—Impaired liver is a problem in the proper preparation of any surgical case and the surgeon will do well to realize its increasing importance in view of the increasing knowledge of physiologic chemistry.

The liver often has been designated as the largest endocrine organ in the body and the least understood. It bears the burden of handling the blood from the digestive tract and preparing food stuffs obtained from digestion for further utilization in bodily economy. It is considered essential in detoxifying many of the products of metabolism, or rather catabolism, and preparing them for elimination by the kidneys. It is a point of storage of glycogen, fat and protein.

H. G. Wells in 1908 discovered that anesthetic damage to the liver was proportionate to the amount of fat in the liver.

Ravdin more recently brought out the following relationships of anesthetic damage to the liver: (a) Increased glycogen storage in the liver decreases fat storage and thus cuts down anesthetic damage. (b) In experimental animals he proved that a liver with high fat and low protein storage suffered greatest damage under anesthesia. (c) Animals with high glycogen and low glycogen but the same per cent of liver fat suffered the same amount of liver damage from anesthesia. (d) Animals with high protein storage in the liver and low glycogen and fat had the least liver damage under anesthesia. (e) Gram for gram, carbohydrate feeding saves protein. The preoperative diet should contain at least 3,000 calories proportioned: carbohydrate 75 per cent, protein 20 per cent, fat 5 per cent. Protein is the best protector of the liver and is burned when carbohydrate is not available. (f) Glucose, 3,000 cc. 5 per cent, contains only 600 calories. This is burned immediately and never is stored. This Ravdin proved by liver biopsy at operation having used glucose as preoperative fluid.

Many patients are starved preoperatively and their protein reserve is depleted. I believe patients should be given a diet high in carbohydrate and protein and low in fat in preoperative preparation.

Preoperatively the patient should be given excess carbohydrate and protein with opportunity for storage to protect the liver. Later I will discuss serum protein determinations and their relation to determination of operative risk. The liver impaired by lowered protein storage may be the precursor to the hepatorenal syndrome. Liver regeneration cannot occur on high carbohydrate alone. No organ can form new cells without adequate protein supply.

Patients with acute yellow atrophy might be saved by repeated plasma transfusions. Certainly every patient with liver damage is entitled to the help of high protein administration.

Another type of impaired liver is that of the patient with obstructive jaundice (due to stone in

the common duct or carcinoma of the head of the pancreas). In these cases one will find a tendency to purpura and hemorrhage at operation for, in the absence of bile in the colon, vitamin K normally present is not absorbed and so prothrombin is inadequately supplied. Vitamin K and bile salts can then be supplied and when the prothrombin time is sufficiently reduced (15 to 25 seconds) and proper serum protein and the albumin-globulin ratio obtained by plasma transfusions, operations on these patients can be performed more safely. The liver, when damaged, apparently loses its ability to synthesize serum albumin and thus the albumin-globulin ratio is reversed, the serum globulin increasing relatively.

The icteric index, van den Bergh reaction, cholesterol and cholesterol esters determination also play a part in adequately determining the status of the surgical and anesthetic risk.

5. *The Patient With Diabetes.*—The adequate control of blood sugar by diet and insulin must be obtained.

If gangrene and infection are present, sulfanilamide is of value in preparing the patient or in delaying operation long enough to prepare the patient better.

Carbon dioxide combining power of plasma indicates the extent of acidosis. From 50 to 75 per cent is a normal reading; below 50 per cent indicates acidosis. This is combated by sugars, insulin and a buffer solution such as Hartmann's.

Intravenous alcohol with 5 per cent glucose and saline is oftentimes an aid in improving the general condition of a diabetic surgical case.

In gangrene, roentgen ray and position tests of extremity should be used in determining the extent of arterial damage.

The vasodilator bed is a therapeutic aid in vascular disease.

6. *The Patient With General Peritonitis.*—The control and preoperative care of these patients could fill a book. I will name a few of the supportive measures.

(a) Place patient in Fowler's position or Sims' position postoperatively.

(b) Give nothing by mouth during distention unless the Wangenstein apparatus is in place and working, then hot fluids only.

(c) Give fluids intravenously including the use of alcohol by the Bellevue Hospital method: 100 cc. of 95 per cent ethyl alcohol in 2,000 cc. of 5 per cent glucose in saline given slowly over an eight to ten hour period. This solution affords 800 calories from the alcohol and 400 calories from the glucose, a total of 1,200 calories, also, it affords the patient a mild alcoholic euphoria allowing a decrease in morphine and lessening apprehension which, in my opinion, is a great step toward the patient's recovery. Alcohol adds calories and prevents burning of carbohydrate and protein. Do not give it too quickly for about 10 cc. of alcohol metabolizes per hour and I have had patients become

intoxicated due to the efforts of a too eager nurse or intern.

(d) Give infusion of Hartmann's solution deep into the vastus lateralis muscle along the septum of fascia in the upper lateral thigh. Patient takes 2,000 cc. comfortably by this method and it is especially useful in patients with poor veins.

(e) Blood transfusions should be given daily for anemia.

(f) Plasma transfusions, when whole blood is not indicated, should be given to protect the liver and prevent hypoproteinemia and the decrease of osmotic pressure of blood in the capillaries and, further, to give antibodies to fight infection. The proper appreciation by the surgeon of the value of the plasma proteins is just beginning. The function of maintaining sufficient osmotic pressure in the venous side of the capillary bed depends on maintaining plasma proteins at a level of 7 grams per 100 cc. of plasma. Osmotic pressure is a fundamental force underlying many physiologic processes, for example, (1) excretion of urine, (2) interchange of fluids between cells and intercellular spaces and the vascular system, (3) regulation of blood volume.

To describe roughly the interchange of fluid from the capillary bed to the tissue spaces and back again to the vessels, the fluid is being driven from the capillaries into the interstitial spaces by a blood pressure of about 30 mm. of mercury in the capillaries and fluid is picked up from the interstitial spaces by the venous side of the capillary bed where the pressure within the vessels is about 8 mm. of mercury and the osmotic pressure or pulling power of the colloids or proteins of the plasma is about 20 mm. of mercury. In other words, fluid passes out from the vascular system on the arterial side of the capillary bed by hydrostatic pressure and reenters the vascular system on the venous side of the capillary bed by the pull of osmotic pressure of the protein in the plasma.

When one loses plasma or plasma protein one decreases the osmotic pressure in the capillaries and thus disturbs the normal balance of exchange of fluid and food and waste products between the cellular spaces and the vascular system. Please pardon this digression but I believe it will help stimulate interest in the relationship between modern surgical principles and biochemistry. Study of the modern treatment of shock and of burns also hinges on a knowledge of total protein value and albumin-globulin ratio in the plasma. Surgeons gradually will become not only better anatomic surgeons but better physiologic surgeons if the progress of biochemistry is watched and studied.

(g) Sulfanilamide by mouth or parenterally in one of its forms has definitely decreased the mortality from peritonitis when used early postoperatively or if used preoperatively in expected intestinal resections. About 120 grains should be used daily. There may be toxic side actions from sulfanilamide, causing kidney or liver damage. I had

one such case caused by repeated courses of sulfanilamide and sulfathiazole which in turn was saved by repeated plasma transfusions to bring up serum protein to normal and rearrange an inverted albumin-globulin ratio with consequent liver regeneration and improved kidney function. One toxic reaction is the hyperpyrexia caused by the sulfanilamide group rather than the infection. This is probably a cerebral toxic manifestation due to disturbance of the temperature center. It may appear early and continue for forty-eight hours after discontinuing the drug.

7. *The Patient With Anemia.*—A patient with hemoglobin below 65 per cent is in danger from low oxygen carrying power of the blood. Loss of blood volume may be increased during surgery and there may be loss of blood fluid into the interstitial spaces. This can be combated readily by adequate transfusion before and after operation and the patient operated upon more safely.

8. *The Patient With Metabolic Disease.*—Thyroidosis is the most common of the metabolic diseases. There are various tests for determination of this class of risks, all more or less reliable. A few of these tests are: (1) basal metabolism test which must be repeated to be of value, (2) Henderson's breath holding test which I have mentioned previously and a modification of which the Drs. Bartletts of St. Louis use, (3) ability of heart to return to normal or nearly normal rate after mild exercise, (4) cholesterol and esters and serum protein determination (many patients dying in thyroid crisis show marked liver degeneration at postmortem although probably the liver degeneration is not the major cause), (5) general clinical appearance of patient from nervous and physical standpoint, physical examination of heart as by electrocardiogram.

The toxic patient is prepared for thyroidectomy by rest, reassurance, Lugol's solution, phenobarbital, sugars, alkalies, acetylcholine of sodium, roentgen ray, or ligation.

Avertin basal anesthesia in the room, following sedation and morphine, and followed by cyclopropane with its high  $O_2$  administration, and novocain locally if desired, is the anesthetic of choice in the majority of these cases.

Postoperatively, glucose, fluids, morphine, oxygen, transfusion, ice packs for hyperpyrexia, iodides and sedatives should be used as needed or indicated.

I shall discuss the choice of the anesthetic agent briefly.

Cyclopropane gas, administered by a competent, medically trained anesthetist has been found to be a safe and satisfactory anesthetic on the surgical service of the Kansas City General Hospital. Neither cyclopropane nor spinal anesthesia offer any definite liver damage and from this viewpoint are preferable to ether.

The development of a continuous spinal anesthesia technic by Lemon at the Philadelphia General Hospital is interesting. For several years he has

used this method of anesthesia in surgery below the diaphragm. Instead of giving the figured dose for the patient's size and thereby increasing the danger of toxicity from the drug, he starts with 500 milligrams of novocain in 10 cc. of spinal fluid, giving 1 cc. of this mixture at a time intraspinally, allowing time between each 50 milligram dose for some fixation of the anesthetic agent and also metabolizing some portion of the dosage. With this small repeated dosage one will find little fall in the blood pressure. He contends that the case which does not get anesthesia from the ordinary dosage of novocain is simply refractive to the action of novocain and larger doses of novocain are necessary to anesthetize these patients. He claims to have given as high as 400 milligrams with no ill effects to an individual before anesthesia was obtained. Also, he claims to have given almost 2,000 milligrams with no ill effect to a patient during a three hour operation. With small repeated dosages, the anesthetic is more controllable and it has been found useful on the surgical service at the Kansas City General Hospital where it is still in the study stage but is being found practical.

#### ADDENDA

Gelatin in the diet is an incomplete protein. It contains seventeen of the twenty-two amino acids but three amino acids essential to maintenance of protein nutrition are missing. Meat is a "complete" protein.

Vitamin C and serum protein aid in wound healing.

Plasma protein is a possible aid in pneumonia with pulmonary edema. Edema of the intestines postoperatively is due to lowered plasma protein from preoperative starvation of the patient for intestinal surgery. Protein by vein or by mouth will reduce the edema. This is of value in cases with poorly working intestinal anastomoses and poor healing.

Blood volume of the average adult (150 pounds) is 6,300 cc. or 3.3 liters per square meter of body surface. Whole blood equals 90 cc. per kilogram of body weight or 9 per cent of the body weight. Plasma equals 50 cc. per kilogram of body weight or 5 per cent of body weight. The volume of plasma in the average person is about 3.5 liters. The protein of plasma is the most important substance differentiating it from interstitial or intracellular fluids. Protein is 7 per cent of plasma by volume (approximately 7 gms. per 100 cc.). Total protein is proportioned as follows: fibrinogen .27 grams per 100 cc. plasma, globulin 2.7 gram and albumin 4.1 gram.

The albumin and globulin fractions probably are produced in the liver from amino acids from the digestive tract. Protein can be built up by proper high protein diet for from two to seven days. Protein is necessary to build cells. Meat is a complete protein, contains vitamin B and is an essential food.

Water equals 70 per cent of body weight; intracellular fluids equal 50 per cent and intercellular (interstitial and blood) fluids equal 20 per cent. Blood contains 7 per cent of the body's water or 9 per cent of body weight. A loss of 25 per cent of body water is usually fatal. A loss of more than 30 per cent of blood volume is usually fatal.

Water intake: (1) Fluids. (2) Water from metabolism of foods, mixed diet, yields approximately 350 grams of water daily or 14 grams per 100 calories. One gram protein stored in the body will store 3 grams of water. An average adult has 2 kilogram protein storage in the liver. (3) Saliva, gastric juice, bile, pancreatic juice and intestinal secretion equals about 8 liters in twenty-four hours. Water output: (1) Skin 500 cc. (2) Expired air at average temperature and humidity 350 cc. (3) Urine 1,500 cc. (4) Feces 150 cc. In an adult kidney the glomeruli excrete 170 liters in twenty-four hours but reabsorb in the tubules all but 1.5 liters which is excreted into the bladder as urine.

NA is the chief basic (cation) in interstitial fluid and plasma; K is the chief basic (cation) in cells; Cl is the chief acid (anion) in interstitial fluid and plasma;  $PO_4$  is the chief acid (anion) in cells.

Hemoglobin total in the average person is 1 kilogram or 14 grams per kilogram of body weight. Normally there are 15 grams of hemoglobin per 100 cc. of blood. Iron is present at 50 milligrams per 100 cc. of blood or about 4 grams in the average person.

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## TREATMENT OF BURNS

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I want to discuss the treatment of burns in detail paying particular attention to second degree burns involving from 20 to 60 per cent of the body surface, a condition causing the death of quite a few patients.

Burns may be classified according to the provocative agent as follows: (1) thermal, (a) fire, (b) boiling liquids; (2) electrical, (a) electrical current, (b) x-ray and radium; (3) chemical.

In 1832 Dupuytren proposed that burns be classified as first, second, third and fourth degree and this rule is generally followed today. In 1924 S. G. Berkow advanced his method of estimating the extensiveness of burns based on area proportions. This is a more scientific method than the "loose guess" so much used now. The Berkow method of estimating extensiveness of lesions based on area proportions, as simplified by myself, follows:

Head .....	6 per cent
Trunk (including neck) .....	38 per cent
Anterior surface, 20 per cent, posterior surface,	18 per cent.
Upper extremities .....	18 per cent
Arms 13.5 per cent (1 arm is $\frac{3}{8}$ of upper extremity).	
Hands 4.5 per cent (1 hand is $\frac{1}{8}$ of upper extremity).	
Lower extremities (including buttocks)	
.....	38 per cent
Thighs 19 per cent (1 thigh is $\frac{1}{4}$ of lower extremity).	
Legs 12 per cent (1 leg is $\frac{1}{6}$ of lower extremity).	
Feet 6.4 per cent (1 foot is $\frac{1}{12}$ of lower extremity).	

Estimate each part and total the sum for extensiveness of the total lesion and to classify the extensiveness of the lesion in each degree; as total second degree burn, total third degree burn, gross total.

Davidson in 1925 introduced his tannic acid treatment in an effort to stop the tremendous loss of protein and serum from the burned areas. This was a great improvement over other treatment then being used and at once received recognition.

In July 1934 Bettman first used 10 per cent silver

nitrate to follow Davidson's tannic acid treatment and this method, Davidson-Bettman treatment, is now universally accepted as the best method when properly used. I have followed the method since 1935 with this exception: On the face and hands 2 per cent gentian violet, suggested by R. H. Aldrich of Boston, is more desirable since it produces a thinner and more supple tan which, when it loosens about the eighth day, leaves a healed area. A triple dye may be used instead but no method is completely satisfactory. The tannic acid and silver nitrate gives an eschar which leaves a vicelike fixation of the eyelids which is uncomfortable and may lead to ulceration of the cornea.

I would like to emphasize that greases of all sorts should be abandoned. There is no justification in their continued use in extensive second degree burns. When applied, the lesions become infected and septicemia may develop. In third degree burns, avoid coagulation but debridement of such areas should be practiced and local dressing with petrolatum is desirable.

My experience with a colored man some three years ago who was smeared with automobile grease before admission to the hospital emphasized this point sharply. He had suffered a 50 per cent burn. After surviving his shock he succumbed to septicemia three or four weeks later. An effort to provide channels for drainage with the knife and saline irrigations failed although sulfanilamide was tried. Removal of grease by ether or xylene under anesthesia had not prevented infection.

### FIRST AID TREATMENT

On admission of the patient five or six physicians and an additional five or six nurses are mobilized immediately. Morphine gr.  $\frac{1}{4}$  H should be administered while the anesthetist is administering nitrous oxide plus oxygen analgesia or anesthesia. Ether is seldom necessary. One intern, properly gowned and with hands in sterile gloves, washes out the eyes with boric acid solution if the face and eyes are involved. A second intern roughly washes off all loose, charred skin and debris. A third intern follows with forceps and removes the burned skin cleanly. A nurse using sterile "spread towels" dries the prepared area and is followed immediately by the fourth intern who applies a 5 or 10 per cent tannic acid by swabs. Another nurse dries this area and is followed by the fifth intern who swabs on 10 per cent silver nitrate which is dried immediately by another nurse. The sixth intern will be free to devote his attention to the face if gentian violet is deemed preferable. In all, this takes about 15 minutes and by this time the floor nurses have set up a tent bed covered with sterile sheets and linen and with sufficient lights to heat it and combat the shock.

It is evident that the quicker the protein and plasma loss can be stopped, the better is the patient's chance of survival. In some cases a loss of from 3,000 to 5,000 cc. of protein may occur. Difficult as

Table 1. Data on Case 2

Date	W. B. C.	R. B. C.	Hb. Per Cent	N. P. N.	Dia- stase	Chlor.	Plasma Protein		
							Total	Albumin	Glob- ulin
9/13/40	27,500	10,770,000	105	39	50	320			
9/14	10,000	5,700,000		78	20	220			
9/15				68	22	400			
9/16		4,800,000		77	30	410			
9/17		4,900,000		67	15	450			
9/18	6,000	4,650,000	81	63	13	460	7.6	4.7	2.9
9/19	6,250	4,000,000	75						
9/20	5,650	4,470,000	73	41	13	484			
9/23	6,300	4,600,000	78	36	16	484			
9/26				26	25		5.8	4.4	1.4
9/30	6,600	4,000,000	64	31	47		6.1	3.0	3.1
10/2		4,200,000	70						
10/3		4,300,000	70						
Normal				25-35	80-150	450-550			

this loss is to make up, it is surprising what 1,000 cc. of blood plasma will do. My attention was called to the use of plasma in burns by Dr. R. B. H. Gradwohl in 1933 at the St. Louis County Hospital where I first used the remedy.

As soon as the patient has been placed in bed, I order complete blood counts, check the blood chemistry, obtain special nurses if possible and begin collecting blood for blood plasma. In a recent case at the St. Louis County Hospital a patient received 1,000 cc. plasma within twelve hours of the accident and another 1,000 cc. within the next twelve hours, which proved life saving. Blood plasma is the easiest and quickest way to restore the blood volume and cut down the severe hemoconcentration and protein loss. Clinical edema will not occur unless the plasma proteins are reduced below  $4\frac{1}{2}$  mg. per cent. Dried powdered plasma is being used in London and, no doubt, will soon be on the market here. It will be a great help and time saver and will save many lives. The next development likely will be the chemist analyzing and manufacturing blood plasma and this may be one of the great epochal advances of this war. Hence, one sees the serum protein loss which normally takes weeks and even months to restore to normal being completely made up within a few days or even hours. Sufficient glucose and saline may be administered if nausea persists.

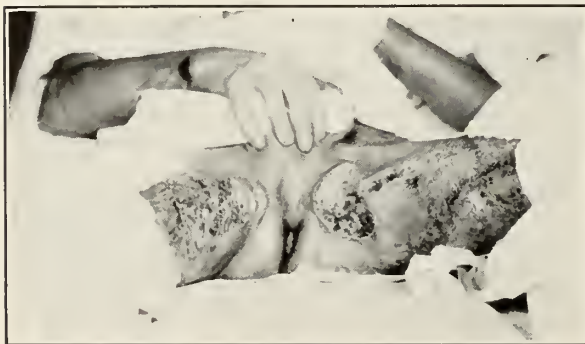


Fig. 1. Phagedenic ulcers due to colon bacillus in case 1, eradicated finally by live cautery. Note thrombosed pile which was ignored.

Under this plan of treatment the enormous leukocytosis, frequently of 27,000 to 35,000, drops to 10,000 or less the second day and a red blood count of ten to eleven millions is halved and the hemoglobin takes a corresponding dip going below 100 per cent or 18 grams. (See table 1.)

I also wish to record a case of acute gonorrhea in a patient with a 50 per cent burn in whom the temperature rose to 103 F. for ten days and no drugs or treatment were administered. The gonococcus disappeared within forty-eight hours and the cure was undoubtedly due to the prolonged rise of the body temperature.

Various dressings have been used and given up. In 1915 in a second degree burn of the legs of a young child, after debridement I dressed the limbs with sterile zinc stearate (protecting the lungs) and to my surprise found at the third visit com-



Fig. 2. Showing extent of burn on limbs in case 1 in which colon bacillus infection was very troublesome.

Table 2. Data on Case 3

Date	W. B. C.	R. B. C.	Hb. Per Cent	N. P. N.	Dia- stase	Chlor.	Plasma Protein		
							Total	Albumin	Glob- ulin
9/ 6/40	23,550	3,590,000	67				6.2	4.2	1.9
9/ 7	19,000	4,250,000	70	36		325	6.3	3.6	2.7
9/ 8		4,550,000	70	48	25	325	6.7	4.0	2.7
9/ 9	14,000	3,750,000	70	43	50	430			
9/10	9,600	3,900,000	67	33					
9/11				30					
9/16	16,700	3,020,000	44	34					
9/19	24,400	2,700,000	46						
9/24	14,150	3,280,000	55						
9/25				29	71				
9/27	11,700	3,220,000	61						
10/ 3	9,000	3,600,000	73		125				

plete healing. It is a valuable remedy to dust beneath the eschar as it rolls up.

Neck burns in children heal quickly when the anemia is corrected by blood transfusions.

Children from 22 to 28 months of age make up a large percentage of burned children, probably because of their inquisitiveness. If parents were warned by their physicians to watch children of this age and never to leave boiling liquids unguarded for a moment, many of these accidents could be prevented.

Burns on the abdomen frequently are encountered in epileptic patients and sometimes even severe genital burns may occur in these patients. A skin graft may be despoiled as happened in one epileptic patient under my care and in spite of every precaution. These abdominal burns give rise to severe liver damage and even hemorrhagic pancreatitis has been encountered. They early deplete the adrenal reserve.

Deaths occurring within forty-eight hours are due to shock and after then, usually from infection. Adrenal cortex extract or cortate has been used. This substance will help to maintain the salt and water balance.

After ten days, particularly if infection is present, the hemoglobin may decline to as low as 40 per cent and there is a corresponding drop in red and white cells and this is a positive indication for

a large blood transfusion. It results in prompt healing, bolsters the morale tremendously and the patient has a rejuvenated feeling.

As valuable as blood transfusion is in this condition, early ambulatory treatment proves equally helpful. I have seen patients doing so poorly that the nurses and interns had abandoned all hope. The patients were melancholy, they had a low diastase and their general appearances were bad. The only solution is to get the patient up immediately. I always try to do this at the end of the first week. The patient becomes cheerful and he begins to have restful sleep without any drugs. There is another point to getting these patients out of bed early, doubly true of children. Many times while in bed children and adults with burns on the buttocks actually prevent healing. This may be avoided by keeping the patient on the abdomen, getting them up in a wheel chair or walking them about. The



Fig. 3. Showing tremendous edema in case 2.



Fig. 4. Progress at weekly intervals in case 2.

Table 3. Data on Case 5

Date	W. B. C.	R. B. C.	Hb. Per Cent	N. P. N.	Diastase	Chlor.
10/24/40	37,250	4,240,000	70	32	187	300
10/25	9,800	3,900,000	73	33	300	425
10/26	9,900	4,300,000	75	27	56	460
10/28				30	150	475
10/29		4,400,000				
10/30					250	
11/ 1		4,500,000				
11/ 4	10,000	4,250,000	67			

clothing may be held away from the burned areas by allowing it to drop from the shoulders over a hoop.

I want to call attention to the fact that in young children there is often a late plunge downward in the diastase and this corresponds to the poor appearance of the child. Failure to recognize this promptly may account for some of the sudden deaths occurring in young children.

After ten days or so in children the skin rolls up, especially when the treatment has been applied over grease and large sheets of skin are lost leaving a bleeding, weeping area. The best thing to do then is to remove the rolled-up skin, dry the parts thoroughly and dust on zinc stearate powder. If a "ghost dress" is worn the child may be permitted to walk and within from twenty-four to forty-eight hours the limbs will be completely and soundly healed.



Fig. 5. Showing progress, developing contracture (correctible) and end result in case 3. Split skin graft was made to back of left hand.

#### CASE REPORTS

Case 1. M. Patient was admitted December 30, 1934, and 5 per cent tannic acid was applied. He was burned when his truck turned over and caught on fire. He jumped into an open sewer to put out the fire. He had suffered an almost 60 per cent second degree burn. He was given by intravenous administration 1,000 cc. 6 per cent acacia. He developed ugly phagedenic ulcers of the thighs due to colon bacillus which finally cleared up after the use of cautery to the entire surface. He also developed thrombotic pile which was not disturbed. Two transfusions of whole blood were used to combat infection. Patient also developed a severe psychoneurosis from which he recovered after five months.

Comment: Now I would administer sulfanilamide internally and dust the ulcers with it locally.

Case 2. S. Patient was admitted September 13, 1940, and was discharged on November 5, 1940. Explosion caused a 51.5 per cent second degree burn. The patient developed considerable congestion of both lungs from inhalation of fumes and smoke. The patient was given 1,000 cc. of plasma within twelve hours and this was repeated in twelve hours. Cortate in 2 cc. doses was given daily. Zinc stearate was used locally and when the patient became allergic to it, ephedrine and histamine were given. Depression was avoided entirely by getting the patient out of bed early and by the addition of benzedrine sulfate, 5 mgs., at 8, 11 and 2 o'clock. Four blood transfusions were given. Burn was healed in eight weeks. There was some contractures and trouble in closing the hands and fingers.

Case 3. F. The patient, a Negro, was admitted September 6, 1940, and was up in a chair on September 8. Patient had a 33 per cent second degree burn from a stove explosion. Transfusion was given promptly because hemoglobin was 67 per cent and white and red



Fig. 6. Boy, 2½ years old (case 4), circumcised at parents' request on fourth day because of alarming edema. Edema now known to be preventible by omitting fluids and substituting plasma for blood transfusion.

counts were low. Split skin graft of left hand and wrist was done. The burn was healed and the patient home in two months. There was contracture of the little finger and some difficulty in making a fist.

Case 4. W. Patient entered the hospital September 5, 1937, with a history of having fallen into a bucket of scalding water. Grease was applied before admission. This was removed and tannic acid and silver nitrate applied. There was an estimated 50 to 60 per cent second degree burn of arms, trunk, thighs, legs, penis and scrotum. Edema became so alarming that parents demanded circumcision under gas which was performed on the fourth day. One week later this 2½ year old boy sat up in a wheel chair for the first time and it was noted that his spirits were greatly improved. Twenty-four hours after the burn was sustained the hemoglobin was 100 per cent and he was given 250 cc. whole blood. (Because of the edema he should have received plasma.) Four blood transfusions were given and he returned home on the eighteenth day and was entirely healed in three weeks. Blood chemistry was not done but probably would have shown plasma protein of about 4.5 mg. per cent.

Case 5. T. Patient was admitted October 24, 1940, and discharged November 9 and was entirely healed after fifteen days. The patient was a Negro girl, 22 months old. A 35 per cent second degree burn of the body and limbs was caused by hot water. Two blood transfusions of 150 cc. each were given because of the marked anemia. There was a tremendous drop in the diastase on the second day.

#### CONCLUSIONS

1. As soon as the patient is in bed, if an adult, 1,000 cc. of plasma should be administered; 150 to 250 cc. if a child. The sooner it is administered the better.

2. Substitute whole blood to correct anemia and combat infection when present.

3. S. G. Berkow's method of area proportions should be adopted and followed in all hospitals, thereby eliminating the haphazard guess as to the per cent of burned area.

4. A case of acute gonorrhea cured as a result of a second degree burn is reported. The gonococcus disappeared within forty-eight hours.

5. A case of second degree burn of the penis and scrotum in a child, necessitating circumcision, is reported.

6. The danger of heat stroke when the outside temperature and humidity are high is warned against.

7. The use of zinc stearate is emphasized but danger of an allergic reaction is cautioned against.

8. The importance of getting the patient out of bed as soon as possible, thereby preventing the development of a neurosis and assisting healing, is stressed. Benzedrine sulfate is valuable in improving the patient's morale.

9. Second degree burns in children are entirely healed within twenty-one days if treated vigorously. Adults are healed in six to eight weeks or at most two to three months and often skin grafting is not necessary.

10. Keloid formation so frequent in the Negro is greatly increased when infection is added.

11. Split skin grafts are desirable and should be applied to the forearms and hands if the patient



Fig. 7. End result following severe rope burn of palm and left thumb and wrist. Split skin graft was made with perfect function and normal hand.

does not have furuncles. Otherwise, Thiersch grafts may be used.

12. Some form of adrenal cortex should be given at once to prevent any exhaustion or depletion of the reserve. Its value is not comparable to the use of plasma.

13. Since protein enters into the chemical make-up of many hormones and enzymes, a minimum of 100 grams of meat daily may be of value since it provides amino acids; also, two or three eggs may be added to the daily diet, as pointed out by R. F. McGandy.

14. A series of photographs is advisable in all compensation cases.

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Although boiling vegetables reduces their vitamin C content, there are certain precautions that can be taken to make this loss as small as possible, Doris McCray, Cedar Rapids, Iowa, points out in *Hygeia, The Health Magazine*. Here is her advice:

"Keep the vegetable refrigerated until ready to use. Then wash, pare and cut into pieces at the last moment. Avoid soaking in cold water. Small pieces are best since they allow heat to penetrate at once, rendering the oxidative enzyme inactive more quickly. Add salt to the water, to season the vegetable while it cooks. Use as small an amount of water as practical, about one-half a cup, or enough to cover the bottom of the pan. Use a tight lid. Cook until tender, drain and save the vegetable juice. Serve as soon as possible."

## IMPROVEMENT IN THE ACTION OF PROCAINE SALTS IN CAUDAL ANESTHESIA

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Procaine hydrochloride is the anesthetic of choice in caudal anesthesia. However, in the use of this anesthetic, frequently there is pain in the injected area and delay in the induction time.

In a series of 100 anorectal surgical cases, caudal anesthesia was employed. Thirty cc. of 2 per cent procaine hydrochloride was used and in sixty of the cases the caudal area was painful after anesthesia; in twenty of these cases the pain persisted throughout the entire period of convalescence, that is, from two to four weeks. By comparative experiments, attempts have been made to determine the causes of these undesirable qualities.

In order to understand more thoroughly the factors involved in the production of this pain, a study was made in which the same conditions were re-established in a more accessible area. Using the anterior surface of the forearm, a  $\frac{1}{2}$  to 2 per cent solution of procaine hydrochloride in fresh saline was injected intracutaneously and subcutaneously. It was found that the intensity of pain following instillation depended on two factors, (1) the force of injection, and (2) the degree of pH difference between the solution and tissue.

If excessive force was used, an explosive separation of the cellular structure occurred with tearing or stretching of the nerve fibers and ensuing pain. If the solution was injected slowly, that is with little force, the intracellular spaces were distended gradually with fluid with less trauma and subsequently less discomfort.

Nevertheless, when procaine hydrochloride was injected with the greatest care, to prevent hydrostatic trauma, some edema and pain persisted in the injected area. It was concluded therefore that the pain resulted from the forceful introduction of fluid as well as from the irritant nature of the medicament employed.

Using procaine hydrochloride in caudal anesthesia, the average induction time was 16.5 minutes. This is the time that elapsed between the injection of the solution and complete surgical anesthesia. Greater concentrations and increased quantities of medication slightly increased the speed of the anesthetic but at the same time increased the post-anesthetic pain. The average duration of anesthesia was sixty-eight minutes. This parallels studies made by Stumdorf.<sup>1</sup>

Oscar Gros<sup>2</sup> found that the base of salts was more anesthetic than their hydrochlorides; and the efficiency of any local anesthetic depended on the degree of its hydrolysis. Regnier and David<sup>3</sup> confirmed those findings and also added that the anesthetic effect increased in relative proportion to the decrease in surface tension.

The Meyer Overton theory assumes that any local anesthetic is affected through its absorption by lipid constituents of the nerve tissue. P. C. Salisbury<sup>4</sup> determined the hydrolysis and hydrogen ion concentration of several forms of procaine. He found the following:

Solution	Percentage of Hydrolysis	pH Value
Procaine hydrochloride	1.22	5.5
Procaine acetate	9.44	6.7
Procaine borate	53.91	8.4

From his studies he concluded that the increase of the hydrogen ion concentration increased the speed of absorption as well as improved the efficiency of the anesthetic.

In view of the work of these experimenters, it was thought best to study the action of procaine hydrochloride, procaine borate, procaine hydrochloride buffered with sodium bicarbonate and procaine hydrochloride buffered with sodium carbonate. In order to enable observations on both nerve and cutaneous response, the skin over the caudal area as well as the caudal canal was injected. Thirty cc. of 2 per cent solution was used.

Solution	Induction Time	Length of Anesthetic	pH	Tissue Reaction
P. hydrochloride	16.5 min.	68 min.	5.5	##
P. borate	4.7 min.	42 min.	8.4	#
P. hydrochloride buffered with sodium bicarbonate	6.2 min.	45 min.	7.6	0
P. hydrochloride buffered with sodium carbonate	5.5 min.	47 min.	7.4	0

Procaine hydrochloride gave the longest induction time, showed the lowest pH concentration, lasted the longest, yet produced the severest tissue reaction. Procaine borate gave the shortest induction time, raised the pH the highest, yet lasted the shortest time, was followed by some pain and gave evidence of moderate skin reaction. The cutaneous irritation may be due to the presence of the Boron ion which, even in small quantities, is toxic to living tissue. This assumption is based on the fact that a high pH volume alone, within safe limits, will not cause tissue irritation as is proved by raising the pH with increasing quantities of procaine bicarbonate and procaine carbonate.

The bicarbonate and carbonate forms of procaine showed no tissue reaction in the same concentration. The induction time and length of anesthesia were nearly the same, and the pH was close to that of the tissue itself. It was concluded, therefore, that the anesthetic of choice is procaine hydrochloride buffered with sodium bicarbonate or procaine hydrochloride buffered with sodium carbonate.

To understand the mode of action when alkalis are added to procaine hydrochloride, it must be remembered that lipoids of nerve tissue have greater affinity for the base than for the acid forms of anesthetic salts. Accordingly, by using weak bases such as sodium borate, carbonate or bicarbonate, the anesthetic efficiency is increased either by partial conversion to the alkaline form of procaine, by

the decrease in surface tension through buffered action or by both.

Because of its greater stability, procaine hydrochloride buffered with sodium carbonate was used in an additional series of eighty cases. By adding  $\frac{1}{2}$  grain of sodium carbonate to 1 ounce of 2 per cent procaine hydrochloride in saline, the pH was raised from 5.5 to 7.4 which is the optimum concentration for injection. The solution is clear and without sediment. From 12 to 20 cc. of 2 per cent procaine hydrochloride buffered with sodium carbonate produces adequate and efficient anesthesia as compared to 30 cc. of procaine hydrochloride. No toxic effects were noted. Since there was no blood pressure drop with this form of anesthesia, ephedrine hydrochloride was not used.

#### CONCLUSIONS

1. Procaine hydrochloride has been the anesthetic of choice in caudal anesthesia but has certain disadvantages.

2. The injection of solutions such as procaine hydrochloride, which has a pH volume of 5.5, produces edema and pain because of acid-base difference.

3. Procaine hydrochloride buffered with sodium bicarbonate or carbonate with a pH of 7.4, which is almost identical to normal tissue, minimizes post-anesthetic pain and shortens induction time.

4. The buffered salts of procaine are more efficient than procaine hydrochloride because less anesthesia is required.

5. Ephedrine hydrochloride is unnecessary.

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The chewing of poison ivy (*Rhus toxicodendron*) leaves is not to be recommended as a means of desensitization, Seymour H. Silvers, M.D., Brooklyn, declares in a report in *The Journal of the American Medical Association* for May 17 of the case of a woman with a known sensitivity to the shrub who chewed the leaves on the advice of a physician and of friends. Two days later she incurred a severe eruption of the mucous membranes of the mouth in addition to an inflammation of the face, lips and hands. She had picked the leaves herself.

The pain of the lips and mouth was so intense that talking was an ordeal and eating solids or even semi-solids became difficult because of the swelling and pain attending movements of the cheeks and tongue. Two days after her mouth became sore the condition had traversed the entire gastrointestinal tract.

Treatment consisted of the application of Burow's solution ointment three times daily to the inflamed regions and rinsing of the mouth every two hours with a solution of zinc chloride. After three days the mouth lesions cleared sufficiently to permit the eating of semi-solid foods without pain and the hands, lips and face were much improved.

## INFECTIONS OF THE URINARY TRACT

### TREATMENT IN GENERAL PRACTICE

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Physicians are no longer attempting to eradicate an existing infection of the urinary tract without a knowledge of the type of organism causing the infection and an understanding of the contributing pathologic processes present in the urinary tract or elsewhere in the body. It is evident that patients who fail to respond to simple therapy should have a complete urologic examination.

Many times the basic principles concerned in the collection and examination of the urine are either forgotten or are neglected. A specimen of urine that is more than a few hours old is worthless because bacteria flourish and cellular elements if present tend to disappear. A clear urine macroscopically may contain pus and organisms microscopically. On the other hand, a cloudiness of the urine may be due to the earthy phosphates present and not due to the presence of pus or bacteria. If the voided specimen from a female patient is negative for pus and bacteria it is not necessary to obtain a catheterized specimen. However, if pus and bacteria are found in the voided specimen it is obligatory to obtain a catheterized specimen in order to rule out the external genitalia as a possible source of contamination. If the voided specimen of urine from a male patient reveals pus or bacteria, it is important to have the patient void into two glasses. The specimen in the second glass is used for the examination in order to rule out the urethra and prostate as the possible source of the pus and bacteria.

The urine should be examined for albumin, sugar and specific gravity. A specimen should be centrifuged and the sediment examined for cellular elements and crystals under high power. This sediment should be allowed to dry on the microscopic slide and a Gram's stain made. This stained smear should be examined for bacteria under the oil immersion lens. The pH of the urine can be checked easily by the use of nitrazene paper and a color chart. A knowledge of the pH is important, as will be pointed out later, in the diagnosis and treatment of certain urinary tract infections.

For practical purposes the types of organisms may be divided into Gram positive and negative bacilli, and Gram positive and negative cocci. A culture is necessary to determine the exact type of organism present but, for the average case, this is neither practical nor necessary.

Generally speaking, the coccal infections reach the urinary tract through the blood stream while the bacillary infections reach the urinary tract through the urine in a retrograde manner. The incidence of coccal infections is about the same in the two sexes, while the incidence of bacillary in-

fections is three times as common in the female as in the male.<sup>1</sup>

Infections of the kidneys may be divided, for purposes of discussion, into pyelonephritis of children, pyelonephritis of adults and pyelitis of pregnancy.

*Pyelonephritis of Children.*—In this group of cases the diagnosis may be obscure unless the urine is examined. A convenient method of obtaining a specimen from young children is to tape a test tube over the penis of a male child, or against the urethra of a female child after the parts have been thoroughly cleaned. The symptoms of urinary tract infection in children may be multiple and variable but seldom do they point to the urinary tract. Among the many signs and symptoms may be mentioned refusal of food, convulsions, chills and fever, vomiting, failure to gain weight, gastroenteritis, anemia, lassitude and irritability. In children with pyelonephritis it is of the utmost importance to rule out coexisting infection elsewhere in the body as well as congenital anomalies of the urinary tract.

*Pyelonephritis in Adults.*—The clinical picture in the acute and subacute forms is fairly characteristic. There are generally chills and fever, frequency of urination, burning on urination, and costovertebral tenderness. In the hematogenous infections of the urinary tract it must be remembered that the urine may reveal no organisms until later, therefore, several specimens of urine may have to be examined before the true nature of the condition is determined. Costovertebral tenderness is usually evident in cases of hematogenous infection.

*Pyelitis of Pregnancy.*—A dilatation of the right ureter, with a resulting stasis of urine, is almost a universal finding during pregnancy. A dilatation of the left ureter is somewhat less frequent. The cause of this dilatation is not clear. It is probably not due to pressure alone but to an atony of the ureter associated with a corresponding relaxation of the uterine musculature.<sup>1</sup>

#### TREATMENT

*Acute Pyelonephritis.*—In this condition bed rest and the forcing of fluids are of the utmost importance. The excess urine formed as a result of forcing fluids helps to dilute toxins and mechanically remove millions of infecting organisms. Because of the frequent nausea and vomiting, drugs and fluids are best given subcutaneously or intravenously until they can be tolerated by mouth. Physiologic salt solution alone or in combination with a solution of 5 per cent glucose is usually used, 2,000 to 3,000 cc. a day. Since there is always potential danger in overloading the tissues with sodium chloride, I prefer to use 1,000 cc. of physiologic salt solution and 2,000 cc. of 5 or 10 per cent glucose in distilled water in each twenty-four hours. Sulfanilamide, 300 cc. of .8 per cent, subcutaneously every four to six hours is usually the treatment of choice. Occasionally 5 cc. of 1 per cent aqueous mercurochrome in 500 cc. of

normal saline given intravenously will cause the temperature to decrease by crisis to normal and remain there. This may be repeated in twenty-four hours if necessary. The need for drainage of the kidney by ureteral catheter in acute infections of that organ is open to debate. However, I believe this procedure is indicated if (1) the renal pain is severe, (2) the pulse rate is rapid (a better index of toxicity than the temperature in renal infections), (3) obstruction is present as shown by an intravenous urogram, (4) and in pyelitis of pregnancy even if there is no true mechanical obstruction or acute pain present. The atonic dilatation of the ureter incidental to pregnancy has responded well to ureteral drainage. Also, the infection may or may not return with the next pregnancy. With the use of the newer chemotherapeutic agents the need for ureteral catheterization is diminishing.

*Chronic Pyelonephritis.*—In the treatment of chronic pyelonephritis it is important that the renal function not be impaired seriously if the drugs used are to be excreted in the urine. Patients with an elevated blood urea do not tolerate the newer drugs, especially mandelic acid. The sulfonamide group is better tolerated in these cases.

In the treatment of pyelonephritis it is important to rule out a possible focus of infection in the body such as the tonsils, teeth, throat, prostate, sinuses and the uterine cervix, especially in the obstinate and recurring types of infection. Any obstruction of the urinary tract is of the utmost importance because it is almost impossible to clear up any infection in the presence of urinary stasis. These obstructions may be congenital or acquired, such as stricture, stone, neoplasm, aberrant blood vessel, hydronephrosis from infection, large prostate, diverticulae, contracted bladder neck, cord bladder, polycystic disease and atrophic pyelonephritis.

In general, the Gram negative bacillary infections and infections with the streptococcus fecalis are best treated with elixir of ammonium mandelate or sulfathiazole. The dosage of elixir of ammonium mandelate is drams 3, given after meals and at bed time, for a period of from eight to twelve days. Because of the nausea occasionally produced by this drug, it is better to begin with one half this dose and increase it rapidly to the full dose. The pH of the urine must be kept at 5.5 or below if this medication is to be effective. This is accomplished by limiting the intake of fluids to 1,200 cc. a day and allowing no citrus fruits, baking soda, milk of magnesia or alkalis of any kind. It may be necessary to give ammonium chloride or nitrate, grains 30, three or four times a day in order to keep the pH of the urine at the required level. Sulfathiazole, grains 40 to 60 a day, in divided doses, is proving of value in the treatment of these infections. Helmholz<sup>2</sup> recently has shown that better results are obtained in the treatment of streptococcus fecalis infections with sulfathiazole if the pH of the urine is kept around 5.5 or lower.

The Gram positive bacillary infections and the coccal infections are best treated with the sulfonamide group of drugs such as sulfanilamide, sulapyridine, neoprontosil and sulfathiazole, in doses of from 40 to 60 grains a day for from eight to twelve days. Soda bicarbonate, grains 40 to 60 a day, may be used to advantage if these drugs tend to cause nausea or vomiting. Milk also tends to reduce the unpleasant gastric symptoms. While using the sulfonamide group of drugs one must watch for evidence of granulocytopenia and hematuria. If sulfathiazole fails in the treatment of staphylococcus infections, neoarsphenamine (grams .3) intravenously every five days for two or three doses may be used to good advantage.

*Proteus ammoniae* and the other urea splitting organisms which were formally so difficult to treat with acid therapy are responding well to the sulfonamide group of drugs. In any urinary infection in which the pH remains high (on the alkaline side), suspect one of the urea splitting organisms.

It may be necessary to use alternate courses of mandelic acid and sulfonamide therapy in some cases with mixed infections. In some of the stubborn cases it becomes necessary to give two or three courses of treatment, two or three weeks apart, in order to clear up the infection entirely. All cases should be checked within two to three weeks after therapy has been stopped in order to be certain that the cure is permanent. Also, it must be remembered that a symptomatic cure and an actual cure are not synonymous. The urine must remain free of pus and organisms before the case can be pronounced cured.

The old enemy, tuberculosis of the urinary tract, must not be forgotten, especially if the urine contains pus but no organisms either by Gram stain or the ordinary culture methods; or if the case fails to respond to simple therapy. A history of tuberculosis elsewhere in the body of the patient or in the patient's family may be of help. The intravenous urogram, retrograde pyelogram, a special stain of the urinary sediment for acid fast organisms and guinea pig inoculation should settle the question in doubtful cases.

In the treatment of bladder infections with the accompanying frequency, nocturia, urgency and strangury it is important to soothe the acute cases and stimulate the chronic ones. Chemotherapy, by mouth, is indicated depending on the type of organism present. Local therapy such as bladder irrigations with 1:8,000 potassium permanganate, saturated solution of boric acid, or 1:1,000 aqueous merthiolate for the acute cases, and 1:3,000 acetic acid, or from 1:10,000 to 1:1,000 silver nitrate for the chronic cases, should be used. The irrigations should be followed by instillation of an ounce of 5 per cent argyrol, 7 per cent silver iodide emulsion or sterile mineral oil, 1 part to 2 part of 5 per cent argyrol. In some of the acute cases of cystitis nothing is as soothing as the instillation of one or two ounces of sterile mineral oil, 1 part to 2 parts of

5 per cent argyrol. Belladonna and opium suppositories, or soda bicarbonate grains 30 and codeine sulphate grains  $\frac{1}{2}$  every four hours helps to control the urgency and strangury. Hot sitz baths often give marked relief.

In all bladder infections it is important to check for infection elsewhere in the urinary tract, foci of infection elsewhere in the body, residual urine and bladder stones or neoplasm.

A word should be said in regard to the care of the patient who is unable to void following an operation. A patient who is unable to void within eight or ten hours after an operation should be catheterized because an overdistended bladder, with the resulting residual urine, offers poor resistance to infection. Patients who void frequently and only small amounts at a time should be checked for residual urine. A distended bladder should be suspected in any comatose or semicomatose patient who becomes unduly restless. After each catheterization it is a good idea to instill 1 ounce of 1 per cent aqueous mercurochrome. Occasionally the instillation of one ounce of 1 per cent aqueous gentian violet will help the patient to void voluntarily the next time and thereafter. Sulfanilamide or sulfathiazole, grains 20 to 30 a day, may be given as a prophylaxis against infection in cases requiring repeated catheterization or in cases with a retention catheter in place. If infection develops it should be treated as outlined previously.

#### CONCLUSIONS

1. Attention to details in regard to the collection and examination of the urine is important in the diagnosis of suspected urinary tract infections.

2. A knowledge of the type of organism causing the infection and the proper therapy for that organism are essential for the intelligent treatment of urinary tract infections.

3. If the infection fails to respond to simple therapy a complete urologic examination should be made.

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Still another use for one of the sulfanilamide derivatives is suggested by J. Elliot Levi, M.D., and Abner Willen, M.D., Baltimore, in *The Journal of the American Medical Association* for May 17, who report that the treatment of a typhoid carrier with sulfaguandinine resulted in six consecutive negative cultures for the typhoid organism.

All cultures following previous recommended treatment, use of the drug, iodophthalein, and removal of the gallbladder were positive for the organism. "The time elapsing since discontinuance of the drug [sulfaguandinine]," the Baltimore physicians point out, "has been brief, but on no occasion have the stools shown the presence of *Eberthella typhi* [typhoid organisms]. It is felt that this method of therapy [treatment] is worthy of further trial."

## DIFFERENTIATION OF TOXIC GOITER FROM STATES SIMULATING HYPERTHYROIDISM

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Accompanying the stress and strain of the last ten years, there seems to be an increasing number of patients with various kinds of nervousness, the cause of which must be determined accurately in each case lest the subsequent treatment make the victim worse rather than better. Every physician has seen the patient complaining of nervousness, heart consciousness, varying degrees of weight loss and a so-called basal of plus 20 who has been operated on for toxic goiter without improvement in symptoms.

Any specialist, general practitioner or junior medical student can diagnose correctly the typical full blown case of hyperthyroidism, but it is the borderline case which offers at times a challenge to one's diagnostic ability. Therefore, it is the purpose of this paper to present the methods and means by which a high degree of accuracy in the proper classification of this latter type of case has been attained.

For the sake of completeness one must mention diabetes mellitus, pulmonary tuberculosis, primary heart disease and the leukemias; however, day in and day out when one is confronted with the picture of nervousness, heart consciousness and weight loss the diagnosis will lie between hyperthyroidism, functional nervous states, such as anxiety neurosis and neurocirculatory-asthenia, and hypothyroidism. The inclusion of the last mentioned condition may be surprising since it is not commonly listed or discussed in papers on the differential diagnosis of thyrotoxicosis. However, I can vouch for the necessity of its inclusion because of the frequency with which patients are referred for operation supposedly having toxic goiters who upon further examination turn out to be markedly hypothyroid instead. This error is quite understandable in view of the fact that cases of hyperthyroidism and hypothyroidism not uncommonly exhibit several similar symptoms, although few similar signs.

The importance of a most searching history cannot be emphasized too strongly since on it alone can the correct diagnosis be made or strongly suspected in a large majority of the cases.

Let me now analyze the characteristics of the *major symptoms* common to the three states under consideration.

1. The *nervousness* of hyperthyroidism is largely physical and is best exemplified by a fine fast tremor which is increased by exertion. In addition, the victim of this malady is more irritable than formerly and may cry with little provocation. In

anxiety neurosis the nervousness is really some form of fear and is described by the patient as an "inward tension" which, when too great, results in panic. Quite commonly these unfortunate persons exhibit phobias of crowds and of closed spaces. It should be remembered that the largest number making up this functional group is young adult females who are apt to give a family history of similar nervousness in one or both parents.

2. The *fatigue* in thyrotoxicosis is quite characteristic. The patient wakens refreshed by a night's sleep, starts in a hurry because of overstimulation but tires rapidly as the day wears on. Upon resting a bit at this point, he will regain strength for additional effort. Because of the overstimulation these people seldom feel badly until late in the disease. By contrast, the neurotic wakens tired, remains that way all day and will not make an effort unless forced. Even the effort of living may seem almost too much for him. Striking is the loss of energy of the hypothyroid patient which is most marked in the morning and which makes getting up out of bed a real trial. Characteristically, however, as the day wears on he feels increasingly better.

3. *Heart consciousness* in borderline hyperthyroidism is usually not prominent except as a result of physical activity, whereas the sensations of racing, fluttering and "pain in the heart" which so plague the victim of neurosis occur even more commonly when the patient is quiet and centering his thoughts upon himself than when occupied. Palpitation and tachycardia are frequent complaints in hypothyroidism particularly upon exercise, however this is not uncommon in any individual who has gained a fair amount of weight.

4. In toxic goiter, *weight loss* occurs even in the presence of a good or large appetite, which may be interpreted as meaning that at the expense of the body tissues more calories are being burned up than are being ingested, whereas in the neuroses the appetite is poor and the weight loss is the result of a small intake. In regard to the hypothyroid I should like to emphasize the point that while gain in weight is the rule, nevertheless one occasionally sees such patients in a state bordering on emaciation. Such persons improve both in respect to appetite and weight with adequate thyroid feeding.

5. So striking is the difference in the kind of *shortness of breath* complained of in hyperthyroidism and in functional nervousness that reasonably careful questioning will leave little doubt in the examiner's mind as to the true nature of the malady. In the former condition, the dyspnea is apparent only with exertion and disappears with rest, while in the latter it is usually under conditions of excitement or fear that the patient experiences the sensation of not being able to get the lungs full enough and has an urgent desire to sigh. Again, the hypothyroid patient will puff upon exertion if he is too heavy.

6. The hyperthyroid patient is *intolerant to heat*

since he already is making more of it than normal through increased rate of combustion. As a result he feels warm all the time and exhibits increased sweating in an effort to radiate this excess heat. These individuals stand hot weather badly and accordingly the thoughtful surgeon will not perform thyroidectomy for toxic goiter on excessively hot summer days but rather will defer operation until a break in the weather occurs. The neurotic patient, on the other hand, is intolerant both to heat and cold, sweats when under mild tension because of his unstable nervous system and even when at rest has cold moist hands and feet. The hypothyroid patient complains bitterly of inability to keep warm enough especially in winter and seldom perspires enough for it to be noticeable.

7. *Choking* in the absence of a perfectly obvious large goiter is almost never seen in thyrotoxicosis, while this symptom, often in combination with a complaint of constriction of the throat, is the strongest possible subjective evidence of functional nervousness. In addition, these throat sensations are invariably exaggerated when the patient is fatigued and are therefore apt to be a source of distress to the patient more toward the end of the day than at any other time.

To mention a few of the outstanding and constant differences found upon *physical examination*, the hyperthyroid individual has a warm and often moist skin while the one with functional nervousness quite characteristically has cold clammy hands and feet. The former almost invariably has a palpably enlarged thyroid gland while such is not the case in the latter unless perchance he has a simple colloid goiter not contributing to his symptoms. In addition, the toxic goiter patient has a well sustained tachycardia and wide pulse pressure due to a characteristic elevation of the systolic and lowering of the diastolic blood pressure, while the pulse of the neurotic individual may be fast one minute and slow the next even when at rest and the pulse pressure is normal. Also, the former exhibits a characteristic fine fast tremor and various degrees of cardiac overactivity with frequently a systolic murmur at the apex, while the latter has no characteristic tremor nor cardiac disturbance other than the simple unsustained tachycardia mentioned earlier.

The hypothyroid patient exhibits a dry and often scaling skin, brittle nails, evidence of loss of hair, normal or low blood pressure and generally a slow pulse, although occasionally the rate may be moderately increased. With fairly well marked hypothyroidism, edema is common especially about the eyes.

Lastly, let us consider several tests which yield information of some importance to the differential diagnosis.

Estimation of the *basal metabolic rate* is almost mandatory because the patient and family physician expect it. In certain instances it is valuable, particularly in showing the progress of hyperthy-

roidism as indicated by repeated tests from time to time; however there are numerous pitfalls in its use such as leaks in the machine, errors by a technician or doctor making only an occasional test and failure to realize that many tests called basal are not actually made under basal conditions. A rather extreme example of this came to my attention recently when a young woman was referred to me by a physician in a neighboring town with a report that she was suffering from a toxic goiter and had a basal metabolic rate of plus twenty-five. When the patient was rechecked the basal metabolic rate was found to be minus five and upon inquiry it was disclosed that the patient had been allowed to prepare breakfast for the family the morning of the previous test following which she had driven her car eleven miles to the hospital. If any physical activity or strong emotional experience precedes the test it can be regarded as being of little value for it will be highly inaccurate.

Another pitfall in the interpretation of the test lies in the fact that one seldom knows what a given patient's basal rate was before the onset of symptoms. For example, just because a patient's test shows only plus 10, one is not justified in concluding that he cannot be suffering from hyperthyroidism for, as a matter of fact, this same person may have had a basal of minus 20 while in normal health and after becoming thyrotoxic and having the level rise to plus 10 is just as sick as the patient who starts at 0 and later has a level of plus 30.

#### THERAPEUTIC TESTS

Occasionally in borderline cases a marked improvement in symptoms following two weeks on Lugol's solution, 15 drops twice a day, will clinch the diagnosis of thyrotoxicosis. If in addition to this, one has available laboratory facilities for obtaining blood amylase determinations and finds that upon repeated tests the level of the amylase is rising from a low figure toward normal during the period of iodine administration, one has additional evidence that toxic goiter is the source of the trouble. It has recently been shown by Dr. Willard Bartlett, Jr., that in about 90 per cent of cases of untreated thyrotoxicosis the blood amylase level is below normal. The blood cholesterol level is usually elevated in true hypothyroidism.

Lastly and of tremendous diagnostic value is the *response of the circulation to exercise*. One records the resting pulse and blood pressure and then has the patient hop twenty-five times on either foot. Next he sits down and the pulse and blood pressure are determined immediately, then at minute intervals for the next five minutes. A normal person shows a prompt moderate rise in pulse rate and pulse pressure and a return to the resting level within two or three minutes following exercise. Persons either actively thyrotoxic or in remissions show a marked overresponse in both pulse and pulse pressure and fail to return to normal within three minutes. By contrast, the patient with func-

tional nervousness shows little or no elevation of pulse pressure in response to exercise. The response of the hypothyroid individual is essentially that of a normal person.

In conclusion let me repeat that at times the differentiation of toxic goiter from states simulating it is difficult to make; however, by following the outline as given I feel that it is possible to classify the vast majority of these cases correctly.

Occasionally a patient with an anxiety state will be found also to be suffering from hyperthyroidism or hypothyroidism, the proper treatment of which results in the removal of much of the load from this individual. However, one of the saddest situations I know is that of the patient with functional nervousness and a simple, nontoxic goiter who is mistakenly subjected to thyroidectomy with the result that his symptoms are subsequently worse than ever due to the additional insult inflicted on an already impaired nervous system. It is certainly the duty of the physician to keep himself well enough informed to be able to protect these unfortunate neurasthenics from ill advised surgery.

929 University Club Building.

## CASE REPORT

### TEMPORARY BLINDNESS DUE TO SULFATHIAZOLE

W. A. BLOOM, M.D.,

M. P. LEECH, M.D.,

AND

W. J. SHAW, M.D.

FAYETTE, MO.

Although one is impressed constantly by the vast therapeutic value of the sulfonamide compounds, one must keep in mind always that toxic complications can and do occur. Fortunately, most of the undesirable reactions are mild and have little effect on the continued use of the drug or the final outcome of the infection. Generally of little clinical significance, nausea and vomiting, cyanosis, dizziness, drug rash and mild hematuria are seen frequently.

However, there are several severe reactions, fortunately comparatively rare, that call for immediate attention, close observation and sound therapeutic judgment as granulocytopenia, leukopenia, acute hemolytic anemia, oliguria, marked hematuria and jaundice.

Recently patients in the Lee Hospital Clinic afforded the unfortunate opportunity to combat severe toxic manifestations arising in four different disease entities: (1) pneumonia complicated by sulfapyridine hepatitis; (2) streptococcic sore throat complicated by sulfathiazole induced granulocytopenia; (3) influenza complicated by sulfathiazole hepatitis and nephritis with convulsions and coma with ultimate recovery, and (4) pyelitis and cystitis complicated by sulfathiazole nephritis with associated temporary blindness.

Since no previous case of temporary blindness due to the sulfonamides was found reported in the literature, it was thought that this latter case would be of interest.

#### REPORT OF CASE

The patient, a white male, aged 26, entered the hospital March 17, 1941, complaining of pain radiating from the right renal region down to the right testicle. He had had frequent attacks during the preceding three months. Urinalysis on admission gave essentially normal findings with occasional red blood cells but no casts or pus cells. Cystoscopic examination with pyelograms revealed partial stenosis of the right ureter but no apparent kidney damage. On March 19, following an enema, the patient complained of a severe cramping pain in the abdomen. Barium studies of the colon verified a diagnosis made several years previously at the University of Missouri Hospital of a partial obstruction of the ascending colon by postoperative adhesions following removal of a gangrenous appendix. On March 24 the patient was feeling in good condition but the urinalysis revealed considerable pus cells per high power field with hyaline casts and an occasional red blood cell. He was placed on sulfathiazole, 1 gram every four hours.

On March 26 he was discharged from the hospital with instructions to continue the sulfathiazole as before. On March 28 the patient complained of a severe pain over the right kidney. Urine specimen obtained at that time was loaded with red blood cells. Sulfathiazole was discontinued and the patient advised to force fluids. On the evening of March 28 the patient became partially blind and by the next morning could distinguish only light and close motion. He was readmitted to the hospital on March 29.

Table 1. Summary of Clinical Record

Date	Nonprotein Nitrogen	Blood Pressure	W.B.C.	Urine	Visual Acuity
March 29	66.7	174/90	17,500	Loaded with r.b.c.; albumin + 2	Hand motion at 6 inches
March 30		146/92		Loaded with r.b.c.; albumin + 2	Hand motion at 10 inches
March 31	40.7	160/110	12,300	Bloody appearance	Hand motion at 4 feet
April 1		178/120	13,200	Very bloody appearance	
April 2	46.1	130/90		Few r.b.c.	20/200-20/200
April 3		148/94		Albumin + 1	
April 4		128/88		60 r.b.c.	
April 5		126/84		5 r.b.c.	
April 6		128/82		no r.b.c.	20/40-20/40
April 7	37.5	120/80	9,350	no r.b.c.	
April 10	31.6	110/68		no r.b.c.	20/20-20/20

**Examination.**—Patient entered the hospital complaining of marked diminution of vision, frontal headache and pain in both kidney regions. The patient received a total of 22 grams of sulfathiazole during a period of eighty-four hours.

**Eyes.**—Pupils were dilated and reacted sluggishly to light but not to accommodation. Retina showed tortuosity and dilatation of the retinal vessels, especially the veins, small petechial hemorrhagic areas and multiple small white crystal-like spots throughout but concentrated around the macula. The patient had perception of hand movements at six inches and retained light perception.

Blood pressure on readmission was 178/92, temperature 99.2 F., pulse 88, sulfathiazole blood concentration 1 mg. per cent, nonprotein nitrogen 66.7 per cent, hemoglobin 86 per cent, red blood cell count 5,250,000, white blood cell count 17,500 (stabs 16, segment 61, lymphocytes 12, monocytes 10), blood platelets 175,000; twenty-four hour intake 1,480, output 1,275, urine loaded with red blood cells.

The patient was placed on a milk diet for the first two days. He was given glucose intravenously in distilled water freely, citrocarbonate every four hours, vitamin B complex, vitamin K and calcium gluconate. His improvement was satisfactory. The blood pressure, blood nonprotein nitrogen and hematuria improved with the return of vision. On April 7 the patient was able to return to his home completely free of symptoms.

**Findings on Discharge.**—Nonprotein nitrogen was 37.5 per cent; clotting time  $3\frac{1}{4}$  seconds; moderate trace of albumin in urine with no red blood cells, occasional pus cell and rare hyaline cast; hemoglobin 95 per cent; red blood cell count 4,710,000; white cell count 9,350.

The patient returned to the clinic on April 10 for a check-up. His general condition was satisfactory. Urine showed no albumin, no red blood cells, no casts; blood pressure was 110/68 and nonprotein nitrogen was 31.6 per cent.

Lee Hospital Clinic.

#### PREVENTION OF SKIN RASH ON HANDS

The prevention of a rashlike eruption on the hands of girls capping whisky bottles with viscos caps is possible by washing off the preservative fluid from the caps before handling them, W. H. Guy, M.D., and F. M. Jacob, M.D., Pittsburgh, suggest in *The Journal of the American Medical Association* for May 17.

#### YOUNGEST VICTIM OF RAT-BITE FEVER ON RECORD REPORTED BY CHICAGOANS

Rat-bite fever in a female infant aged 11 days is reported by Joseph Greengard, M.D., and Edmond R. Hess, M.D., Chicago, in *The Journal of the American Medical Association* for May 24. They believe this instance to be the youngest patient on record. Rat-bite fever has worldwide distribution and is transmitted through the bite of an animal, usually the rat, though other animal vectors, the cat, weasel, dog and pig have been known to transmit the disease.

"Opportunity for such infection is not common in early infancy, and a rat bite sustained at the age of 11 days is remarkable," the two men say. "That such an incident can occur in a modern American urban community is of great sociologic significance. Infestation with rats is widespread in Chicago and at Cook County Hospital a relatively large number of rat bites are observed in young children. The community has made little effort to correct this situation."

## SPECIAL ARTICLE

### THE BARNARD FREE SKIN AND CANCER HOSPITAL RESEARCH REPORT FOR YEAR 1940

E. V. COWDRY

ST. LOUIS

There are two ways to write an annual report. The first describes work in progress throughout the year including the very last day. This is the up-to-date type of report usually requested by donors of funds, but in it there is an element of danger. It is prepared too hurriedly and further thought and other experiments sometimes make it necessary to retract what is said. The second, less exciting but safer method used in this report, bases the account on observations actually published during the year.

The accompanying list includes all papers describing research which members of the staff of the hospital have reported as having published in standard medical journals in 1940. Those based wholly on work done by them in some other institution are marked with an asterisk. Lectures and talks on skin and cancer, although of great educational value, are excluded with the exception of the Annual Barnard Hospital Lecture presented by a distinguished visitor. This list introduces one to a considerable portion of the staff and informs one of their interests as expressed by their 1940 papers.

Since the number of papers in any given year is obviously too great for adequate review in a report of this length, certain lines of work have been selected for brief presentation, more particularly those which have been in progress for several years and have reached maturity in 1940.

Dermatologists and otolaryngologists are becoming virus conscious. When faced by an unknown condition, apparently infectious, they think at once of the possibility of virus action. A systematic search for viruses in skin diseases of obscure etiology therefore was in order. Accordingly, Dr. F. S. Markham, Columbus, Ohio, obtained leave of absence from the Ohio State University during the year 1938-1939 in order to utilize for this purpose the wealth of clinical material available in the Barnard Hospital. His results were presented in two papers. While he did not prove that any of the conditions of unknown etiology investigated were caused by viruses, this possibility was checked so carefully that the ground has been cleared by its virtual exclusion. He also introduced to the Hospital a method of identification of viruses by the inoculation of incubating hen's eggs with suspected materials. This technic was developed to the point of permitting differentiation between smallpox and chickenpox material in a much shorter time than often was required in the clinical study of patients.

Papers by Dr. Morris Moore show the great value of such inoculations in the culture of fungi from a

variety of skin diseases. It is becoming clear that fungous diseases of the skin are of much more common occurrence in this country, and especially in the upper Mississippi Valley region, than formerly was supposed. A chart giving diagnostic and other data has been printed and is available for free distribution to anyone interested. When Holland was menaced by the likelihood of German invasion the United States Public Health Service attempted to make arrangements for the world's greatest collection of living pathogenic fungi to be shipped to St. Louis and lodged in the Barnard Hospital but it was too late.

It is often a source of surprise, in the examination of sections of the skin, that more cell divisions are not encountered. In 1937 Cooper and Schiff began studies designed to ascertain whether a rhythm in mitosis exists. They discovered that in human epidermis the incidence of mitosis is much more frequent by night than by day. In a 1940 contribution, Cooper and Franklin demonstrated a mitotic rhythm in the epidermis of the mouse in which, however, the peak of frequency is by day and the lowest point by night. Obviously, the next problem to investigate is how the rhythm is modified in malignant tissues.

Dr. Joseph Taussig, formerly of Barnard Hospital, and Dr. G. D. Williams, of Washington University, contributed information about skin cancer. A feature in their work is the accurate measurement of skin color. It was found that subjects whose skins tend to darken and redden on unusual exposure, more often exhibit the basal or mixed types if they show cancer. Those who do not so react to unusual exposure more frequently have the squamous variety if cancer develops.

A preliminary report by Drs. Engman and MacCardle supplies a brief statement of results secured in a comprehensive histochemical study of neurodermatitis now in its third year. It has been found that the skin lesions are characterized by a deficiency in the amount of magnesium although magnesium in the blood serum is not reduced. This is the first instance on record of a human disease associated with local magnesium deficiency.

Two papers by Dr. F. J. Taussig on cancer of the vulva and irradiation of normal and metastatic lymph nodes represent the culmination of productive work through many years. Reasons are presented why he thinks that the incidence of cancer of the vulva probably can be reduced 50 per cent if certain steps are taken. A survival rate of 52.2 per cent in five years following iliac lymphadenectomy in cancer of the cervix, as compared with 20 per cent after irradiation alone, is cited as evidence of the value of lymphadenectomy.

Endocrinology has developed so rapidly that it is difficult for the uninitiated properly to associate the facts and to separate them from fiction. Particularly is the relation between hormones and cancer complicated in females. Dr. W. Cramer's

paper on the hormonal etiology of breast cancer is instructive.

The First Barnard Hospital Lecture by Dr. Edgar Allen of Yale is a critical review of ovarian hormones and female genital cancer. Dr. Allen and Dr. E. A. Doisy were the first to report the origin, action and partial purification of the follicular hormone in 1923. It is significant that Dr. Allen warns particularly against giving enormous doses of concentrated estrogenic preparations to aging women. His paper is a mine of useful information.

#### RESEARCH POLICY

About three years ago the medical board of the Hospital faced the problem of research squarely. It was a question whether the research should be mainly individualistic and the small funds at hand be kept fluid and thus immediately available for aid as promising leads are developed, or whether the resources of staff and finance should be concentrated on a single, major, long term research project. Much would be lost if aid to individuals wishing to devote time and energy to testing some idea were discontinued. It was equally clear that the time had come when investigations on cancer, the main problem of the hospital, should be organized. A policy was adopted of trying to do both, of holding a little money fluid while the larger part is devoted to a single project. To plan this project necessitated careful consideration because, if placed in operation, the hospital would be committed to it for a considerable time. Advice was sought in many quarters. It seemed wise to take advantage of the outstanding discovery made recently that cancers can easily be produced in animals by chemicals. The known feasibility of inducing cancer of the skin in mice within eighty days or less by treatment with a carcinogen is alluring. It makes possible the standardization to a remarkable degree of cancer production. It was, therefore, decided to investigate by every available means the stages of carcinogenesis in a single tissue of "pure strain" mice resulting from the repeated application of a single chemically pure carcinogen within this brief period of time. This involves determination of sequences in alterations in properties, especially those that can be quantitatively measured, and the discovery of coincidences and lack of coincidences in the sequences. It is an ambitious program, of a kind never before undertaken as an institutional project, in which chemical, physical, physiological, morphological and other technics are brought to bear upon the malignant transformation of epidermal cells by a group of workers most of whom devote their whole time to it.

That this project is recognized as well planned and likely to yield important results, provided that it can be adequately financed for a sufficient length of time, is evidenced by the fact that several organizations outside of St. Louis have contributed to its support. Among these, the United States Public

Health Service through the National Advisory Cancer Council, the Anna Fuller Fund of New Haven and a foundation that wishes to remain anonymous have taken the lead. At present six full time and several part time investigators are at work.

It is scarcely necessary to point out that the ultimate object in learning all possible about the development of this particular epidermal methylcholanthrene cancer is to maneuver into a favorable position for attempts to prevent and cure it. Having discovered the percentage development of carcinomata in, say, eighty days after measured application of the carcinogen, it will be possible to determine accurately the influence on the development of various experiments. Having ascertained likewise the subsequent history of such induced carcinomata with no treatment, it also will be possible to determine accurately the results of a wide variety of treatments. We definitely have the feeling that cancer cells may be more vulnerable than normal cells to certain influences and that success in the discovery of these influences may follow the trial of a large number of them under conditions such as these in which the effects can be measured.

#### NEW APPOINTMENTS

With the financial aid mentioned, supplemented by funds collected in St. Louis, Drs. William Cramer, Robert W. Evans, William L. Simpson and Robert E. Stowell were added to the full time research staff on July 1, 1940. Dr. Cramer is a leader of international reputation in cancer research. He was the British delegate to the last International Cancer Congress.

On December 10, 1940, Dr. Richard S. Weiss, an esteemed member of the staff of the Hospital, was elected to the presidency of the American Academy of Dermatology and Syphilology. This is the highest honor that can be paid to an American dermatologist.

#### NEW EQUIPMENT

Continuity of animal experimentation has been facilitated by air conditioning of the animal quarters in both summer and winter. A high speed ultracentrifuge of the Beams type which runs in vacuum has been installed. Compressed air has been supplied and a polarograph has been purchased. The spectrograph, microincinerator and electron microscope of Washington University have been made available to the research staff of the Hospital. It is expected that when the cyclotron, now under construction by Washington University, is completed substances made radioactive will be provided.

#### INTEGRATION

Integration of research activities within the Hospital is facilitated by meetings of three kinds. Evening research conferences are held once a month. At each of these two short papers are presented and

discussed. Every second week in the afternoon there is a clinical conference. All interested are invited. The full time research staff holds a weekly conference designed to enable each individual to profit by the experience of all and to encourage the whole group to work together. The stage is set for productive cross fertilization of ideas throughout the Hospital.

Cooperation with Washington University is naturally close. Limitations of space in the Hospital make it necessary to provide rooms for two members of the research staff at the University. Thirty-nine staff members of the Hospital are also on the faculty of Washington University.

There is also increasing cooperation with the United States Public Health Service. A public health nurse is continually sifting the extensive clinical records of the Hospital for data to be used by the Public Health Service in comprehensive investigations on cancer. The centers in the United States approved by the Surgeon General of the Public Health Service as giving the best possible training to cancer specialists include "four outstanding hospitals" of which Barnard is one. The government assigns promising candidates, known as trainees, and pays their salary while at work in the Barnard Hospital. The Hospital cooperates by instruction of trainees in its clinics and laboratories free of charge to the government. Radium provided by the government supplements that already available in the Hospital. Officers of the Service regularly visit the Hospital and staff members of the Hospital visit the National Cancer Institute of the United States Public Health Service in Washington with equal frequency.

#### ANNUAL BARNARD HOSPITAL LECTURE

This lecture is the outstanding event of the year as far as research is concerned. The Barnard Hospital serves the medical profession by arranging for the presentation each year, through the St. Louis Medical Society, of an important aspect of the cancer problem by the best qualified person obtainable. In 1940 the second lecture of the series was delivered by Dr. Carl Voegtlin, Washington, D. C., chief of the National Cancer Institute. His subject was "Possibilities of Improved Therapy for Cancer Patients." He sounded a note of optimism that the plague of cancer will be conquered.

Barnard Free Skin and Cancer Hospital.

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Lifting at a mechanical disadvantage is a common cause of strain in the sacroiliac or low back region, *Hygeia, The Health Magazine* points out.

## DAILY SUGAR ALLOWANCE SHOULD BE TWO TABLESPOONFULS

Two tablespoonfuls daily is recommended as the maximum allowance of sugar by *Hygeia, The Health Magazine*.

In answer to an inquiry as to the effect of sugar in the diet, *Hygeia* says: "One pound of sugar provides 1,800 calories and nothing else. It contributes none of the nutritionally important protein foods as whole grains, fruits and vegetables.

"The eating of white sugar, either cane or beet, in large amounts, may place a burden on the pancreas. The pancreas secretes a substance which is necessary to enable the body to use sugar as a fuel food. If the pancreas is impaired or injured, its ability to secrete insulin is also impaired and as a result the body loses its ability to burn sugar.

"There is also evidence that excessive consumption of sugar may weaken the protective power of the liver and thereby cause numerous so-called bilious symptoms. Brown sugar has the same effect as white sugar. Eating sugar in excessive amounts may make one feel dull and bilious because of these reasons."

## REPORT FIRST AMERICAN CASE OF CYST IN FINGER JOINT

The first American case and the sixth in medical literature of an epithelial (outer skin and mucous membrane covering) cyst enclosed in the bony part of an end joint of a finger is reported in *The Journal of the American Medical Association* for March 22 by Samuel C. Yachnin, M.D., Passaic, N. J., and Frederick Sumner, M.D., Middletown, N. Y.

They say there are two possible explanations of its origin, either congenital (born with) malformation with misplacement of the epithelial cells during the embryo stage of life, or an injury which implants the cells in the bony structure.

In each of the 6 cases reported there was a history of a crushing or penetrating injury which damaged the nail bed. C. Friedländer, the proponent of the first theory, claims that the misplaced cells are stimulated to growth by injury. However, Drs. Yachnin and Sumner state that "it is difficult to accept the view of congenital origin, for trauma [injury] was a constant finding. . . . We feel, therefore, that these tumors are caused by the implantation of epithelial cells into the bone as a result of the injury. This could take place through the smallest kind of a fracture or even by transmission along the vascular [blood vessel] channels. . . . The rate of growth of the tumor appears to be quite slow. In 4 cases the injury was sustained from thirteen to fourteen years before the appearance of symptoms, while in Friedländer's case the interval was one year and in our case two years. . . . No recurrence has been reported following treatment by amputation."

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JUNE, 1941

## EDITORIALS

### THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

1. The establishment of an agency of federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.
2. The allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick on proof of such need.
3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.
4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.
5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.
6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.
7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.
8. Expansion of public health and medical services consistent with the American system of democracy.

HOMER L. KERR, M.D.

PRESIDENT-ELECT, MISSOURI STATE MEDICAL ASSOCIATION, 1941-1942

Dr. Homer L. Kerr, Crane, was elected President-Elect of the Missouri State Medical Association by the House of Delegates at the St. Louis Session, April 28, 29 and 30. Dr. Kerr will serve as President-Elect this year and will be installed as President at the Kansas City Session in 1942.

Dr. Kerr was born in Springfield, Missouri, and spent his early life in Greene and Christian counties where he received his preliminary education. He received his medical degree from the St. Louis College of Physicians and Surgeons, St. Louis, in 1901 and began his practice in Galloway. In 1907 he went to Sparta and in 1911 to Crane where he has remained in practice since that time.

Dr. Kerr has been prominent in medical activities and is eminently fitted to lead the medical profession in the state. Not only has he been active in the Missouri State Medical Association but served as a member of the Missouri State Board of Health from 1925 to 1933 and was president of the Board in 1929. He was vice president of the Medical Association of the Missouri Pacific Lines in 1930.

His activities in the Association are legion. He was delegate from the Lawrence-Stone County



HOMER L. KERR, M.D.



Medical Society in 1920 and from 1931 to 1937; was president of the Lawrence-Stone County Medical Society in 1932. He served as Councilor of the Eighth Councilor District from 1937 to 1941 and was Vice Chairman of the Council in 1937 and 1938.

Since 1938 Dr. Kerr has been a Delegate to the American Medical Association, being reelected in 1940. From 1932 to 1938 he served as Alternate Delegate of the Association.

Dr. Kerr has the respect of the members of the Association for his ability as a practitioner of medicine. He has proved his ability in Association work by his efficient discharge of the duties in the many capacities in which he has served and it is with satisfaction and confidence that the members greet the election of Dr. Kerr as President-Elect.

### THE ST. LOUIS SESSION

The Eighty-fourth Annual Session of the Missouri State Medical Association convening in St. Louis, April 28, 29 and 30, for the first time in fifteen years, had the largest registration in the history of the Association and the best attendance at the scientific sessions. A scientific program on which men of importance in the medical profession appeared, scientific exhibits, commercial exhibits and entertainment by the host society, the St. Louis Medical Society, brought members from all parts of the state in numbers that exceeded registration at former meetings without the large membership in St. Louis.

Dr. Cyrus E. Burford, St. Louis, opened the House of Delegates and presided at the scientific sessions. Dr. Ralph R. Duncan, Kansas City, was elected Speaker of the House of Delegates and presided at the meetings of that body.

Dr. R. B. Denny, Creve Coeur, was installed as President at the Wednesday afternoon session of the House of Delegates and will preside at the 1942 Annual Session which will be held in Kansas City.

Dr. H. L. Kerr, Crane, was elected President-Elect and will be installed as President in 1942. Drs. Harry L. Jones, Kansas City, B. K. Stumberg, St. Charles, and M. D. Overholser, Columbia, were elected Vice Presidents.

Delegates to the American Medical Association elected are Drs. Robert E. Schlueter, St. Louis, and Rex. L. Diveley, Kansas City, with Drs. Clinton W. Lane, St. Louis, and C. A. W. Zimmermann, Cape Girardeau, as alternates.

Dr. Walter Baumgarten, St. Louis, was reappointed Editor; Dr. Ralph L. Thompson, St. Louis, Treasurer, and Mr. E. H. Bartelsmeyer, St. Louis, Executive Secretary. Dr. Curtis H. Lohr, St. Louis, was reelected Chairman of the Council and Dr. W. A. Bloom, Fayette, Vice Chairman. Councilors elected to fill the expired terms of Councilors of the even numbered districts are: Second District, Dr. H. B. Goodrich, Hannibal; Fourth District, Dr. C. E. Fallet, DeSoto; Sixth District, Dr.

A. J. Campbell, Sedalia; Eighth District, Dr. Wallis Smith, Springfield; Tenth District, Dr. E. J. Nienstedt, Sikeston.

Past Presidents were guests of honor at a banquet on Monday evening at which Dr. Morris Fishbein, Chicago, spoke on "American Medicine Prepared." The banquet was followed by a President's Reception and dancing.

The St. Louis Medical Society members were excellent hosts throughout the session and on Tuesday evening entertained members of the Association at a buffet dinner and entertainment.

Round table luncheon meetings on Tuesday and Wednesday gave opportunity for questions to guest speakers and discussion of presentations. The Committee on Maternal Welfare and Infant Care held its annual meeting as a round table luncheon session on Monday.

Following his installation as President, Dr. R. B. Denny, Creve Coeur, made the following appointments to committees: Scientific Work, Drs. Ralph A. Kinsella, St. Louis; Dudley S. Conley, Columbia; Stanley P. Howard, Jefferson City; Ralph R. Coffey, Kansas City. Postgraduate Course, Drs. G. D. Callaway, Springfield; Rex. L. Diveley, Kansas City. Public Policy, Drs. Morris B. Simpson, Kansas City, Chairman; R. M. James, Joplin; Donald M. Dowell, Chillicothe. Defense, Drs. M. L. Klinefelter, St. Louis; M. J. Owens, Kansas City. Medical Education and Hospitals, Drs. Ross A. Woolsey and V. V. Wood, St. Louis. Cancer, Drs. D. A. Robnett, Columbia, Chairman; E. C. Ernst, St. Louis. Medical Economics, Drs. Carl F. Vohs, St. Louis, Chairman; W. F. Francka, Hannibal. Mental Health, Drs. R. P. C. Wilson, Marshall; E. F. Hockett, Farmington. Maternal Welfare and Infant Care, Drs. W. H. Breuer, St. James, Chairman; Ralph R. Wilson, Kansas City; Irl B. Krause, Jefferson City; W. Roger Moore, St. Joseph. Health and Public Instruction, Drs. A. R. McComas, Sturgeon; E. J. Schisler, St. Louis; D. A. Robnett, Columbia; A. J. Durant, Columbia. Constitution and By-Laws, Drs. Robert Vinyard, Springfield; Otto Koch, St. Louis; Joseph C. Peden, St. Louis; G. T. Bloomer, St. Joseph. Fractures, Drs. O. P. Hampton, St. Louis; J. P. Murphy, St. Louis; F. G. Pipkin, Kansas City; D. L. Yancey, Springfield. Conservation of Eyesight, Drs. C. P. Dyer, St. Louis; John McLeod, Kansas City; George A. Hornback, Hannibal; C. G. Tygett, Cape Girardeau; C. R. Bruner, Columbia; C. S. Smith, Springfield. Control of Venereal Disease, Drs. C. T. Ryland, Lexington; J. P. Henderson, Kansas City. Industrial Health, Drs. R. G. Cooper, St. Charles. Physical Therapy, Drs. A. J. Kotkis, St. Louis, Chairman; C. A. W. Zimmermann, Cape Girardeau. Medical-Legal Affairs, Dr. James R. McVay, Kansas City, Chairman. Tuberculosis, Drs. E. E. Glenn, Springfield, Chairman; George B. Kettelkamp, Koch; R. H. Runde, Mount Vernon. Rural Medicine, Drs. H. A. Lowe, Springfield, Chairman; T. W. Cotton, Van Buren; R. E. Breuer, Newburg. Medi-

cal Military Affairs, Drs. H. B. Stauffer, Jefferson City, Chairman; Charles D. Osborne, Sedalia; D. D. Stofer, Kansas City; James E. Stowers, Kansas City; T. P. Brookes, St. Louis. Adviser to Woman's Auxiliary, Dr. H. L. Mantz, Kansas City.

### AMERICAN MEDICAL ASSOCIATION

The ninety-second annual session of the American Medical Association will be held in Cleveland, June 2 to 6. The House of Delegates will convene at 10:00 a. m., Monday, June 2, in the Euclid Ball Room of the Hotel Statler. Missouri will be represented by Drs. A. R. McComas, Surgeon; H. L. Kerr, Crane; Robert E. Schlueter, St. Louis, and Rex. L. Diveley, Kansas City. Dr. J. Archer O'Reilly, St. Louis, is a delegate from the Section on Orthopedic Surgery, and Dr. E. H. Skinner, Kansas City, is a delegate from the Section on Radiology.

The registration bureau, scientific exhibits, technical exhibits, information bureau and a branch postoffice will be located in the Cleveland Public Auditorium, Lakeside Avenue and East Sixth Street. All sections, with the exception of the Section on Ophthalmology and the Section on Laryngology, Otology and Rhinology which will meet in Hotel Hollenden, will convene in the Auditorium. Section meetings will begin on Wednesday, June 4.

The Opening General Meeting will be held Tuesday evening, June 3, at which time the medal to the retiring president will be presented to Dr. Nathan B. Van Etten, New York. Dr. Frank H. Lahey, Boston, will be installed as President and will deliver the president's address. The President's Reception and Ball will be held Thursday evening, June 5, at the Hotel Cleveland.

Members of the House of Delegates will be entertained at dinner on Monday evening, June 2, at the Mid-Day Club and at lunch on Tuesday at the Hotel Statler.

Missouri members who will present papers at the session are Drs. Rex. L. Diveley and Richard L. Sutton, Jr., Kansas City; Paul F. Fletcher, French K. Hansel, Theodore E. Walsh, Frederick A. Jostes and J. Albert Key, St. Louis. Members who will discuss papers are Drs. Peter Heinbecker, V. Rogers Deakin, William H. Vogt, Arthur W. Proetz, Millard F. Arbuckle, Vilray P. Blair, Carl V. Moore, D. K. Rose, Sherwood Moore, St. Louis, and G. Wilse Robinson, Jr., and Frank D. Dickson, Kansas City.

Missouri delegates will present a joint invitation of the St. Louis Medical Society and the Missouri State Medical Association to the American Medical Association to hold its 1944 session in St. Louis.

### FRACTURES

There can be no question of the importance of the place which fracture treatment holds in medical practice today. Industrial expansion, the intro-

duction of the automobile and the speeding up of life generally, have resulted in a great increase in the number of fractures and, furthermore, in an increase in the number of serious fractures which are occurring. There are between five hundred thousand and a million fracture cases annually in this country; a large part of these require prolonged treatment because of their serious character and many result in permanent impairment. Both the American Medical Association and the American College of Surgeons have recognized that fracture treatment today has become a major surgical problem. Both have formed committees whose purpose is to disseminate fundamental information on this subject; both have felt it to be important enough to publish books devoted to fracture treatment.

Five years ago the Council of the Missouri State Medical Association appointed a Committee on Fractures. The purpose of this Committee is to disseminate information which will be helpful to the physicians of the state in meeting fracture problems. This Committee has planned to function in three ways: (1) by presenting fracture demonstrations in the scientific exhibits at the Annual Meeting; (2) by having presented one or more papers on an important fracture subject at each state meeting; (3) by urging each county medical society to devote one meeting a year to a fracture program.

The last proposal is probably the most important from an educational point of view and it is to be hoped that the president and secretary of each county society will take cognizance of it and plan such a meeting during the year. The Committee on Fractures will gladly provide a program for any county medical society which desires such a fracture meeting and will provide the speakers. Dr. Wm. J. Stewart, Columbia, is the secretary of the Committee and any communication addressed to him will receive the attention of the Committee.

Fractures today are important; they are occurring in every county in the state, and they must receive treatment. The Committee on Fractures is ready and willing to give any assistance within its ability which may be helpful to the physicians of the state in meeting the demands which present day fracture treatment is making upon them.

### CARPENTERS AND DOCTORS

The following editorial under the title of "Carpenters and Doctors" which appeared in the *Chicago Journal of Commerce*, April 9, exposes the incongruous and contradictory position of the law and the courts in the suit of the government against the District of Columbia Medical Society and the American Medical Association. It is to be hoped that the Supreme Court may find a basis on which it may review the whole question.

Late last week, a jury in district court in Washington brought in a verdict against the American Medical

Association and the District of Columbia Medical Society. Both organizations were found guilty of violating the Sherman antitrust act in that they sought by various means to discourage the activities of the Group Health Association of Washington, a medical co-operative.

Entirely aside from the merits of the case against the A.M.A. and its Washington counterpart or the merits of the case for the co-operative group, the verdict is of more than ordinary interest. Although no question of interstate commerce was raised in the A.M.A. case, the verdict rests upon a District of Columbia Appellate Court finding that the law governing restraint of trade "embraces the field of the medical profession." This finding was taken to the Supreme Court but the latter refused to consider it.

Labor unions, meanwhile, have been removed from the scope of the antitrust laws except in certain very narrow circumstances, such as those which engaged the attention of Justice Frankfurter in the A.F.L. jurisdictional strike which held up work at the Anheuser-Busch plant in St. Louis. It was this decision that Chief Justice Hughes and Justice Roberts regarded as a "usurpation by the courts of the function of Congress."

So, as things stand for the moment, doctors and medical associations are in trade or commerce and carpenters' and other trade unions are not—save only under special circumstances.

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## NEWS NOTES

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Dr. Ralph E. Duncan, Kansas City, was reelected secretary-treasurer of the Missouri-Kansas Neuro-psychiatric Society on April 23.

Dr. Daniel L. Sexton, St. Louis, was a guest of the Arkansas Medical Society at Little Rock, Arkansas, April 14, 15 and 16, and spoke on "Endocrinology and General Practice."

Dr. Garold V. Stryker, St. Louis, was a guest of the Gibson County (Indiana) Medical Society at Princeton, Indiana, on April 14 and spoke on "Dermatological Problems in General Practice."

Dr. Sam H. Snider, Kansas City, addressed the staff of the Mercy Hospital, Independence, Kansas, April 24, on "Diagnosis, Prevention and Treatment of Bronchiectasis."

Mr. Ira A. Jones, St. Charles, was appointed president of the board of managers of the state eleemosynary institutions on May 6 by Gov. Forrest C. Donnell immediately following the resignation of Mr. W. Ed. Jameson. Mr. Jones has been a member of the board since 1939.

The Missouri Chapter of the American College of Chest Physicians was organized at a meeting in St. Louis, April 29. The organization will meet annually at the time of the meeting of the Missouri State Medical Association. Officers elected are: President, Dr. Herbert L. Mantz, Kansas City; vice president, Dr. E. E. Glenn, Springfield; secretary, Dr. Paul Murphy, Koch.

Dr. James E. Stowers, Kansas City, was installed as president of the Kansas City Surgical Society at the annual dinner of the society in Kansas City, May 7. Dr. B. L. Myers was elected vice president and Dr. Harry C. Lapp secretary-treasurer.

Dr. George W. Corner, Baltimore, Maryland, presented the sixth annual Leo Loeb Lecture, given under the auspices of the Mu Chapter of the Phi Beta Pi Medical Fraternity of Washington University School of Medicine, on May 6 at the St. Louis Medical Society Building, St. Louis. His subject was "The Ovarian Cycle."

Drs. T. K. Brown, St. Louis, and E. H. Skinner, Kansas City, were guests of the Nebraska State Medical Association at its annual session in Lincoln, Nebraska, May 5, 6, 7, 8. Dr. Brown spoke on "Treatment of Gonococcal Vaginitis" and "Postpartum and Postabortal Infections in the Uterus" and Dr. Skinner spoke on "The Priceless Heritage of Medical Freedom."

Dr. B. Y. Alvis, St. Louis, was a guest of the Kansas Medical Society at Topeka, Kansas, on May 13 and 14. Dr. Alvis was one of two guests who presented instruction courses in eye, ear, nose and throat, morning and afternoon of both days of the session. Dr. Alvis' subjects were "Surgery of the Eye," "Diseases of the Optic Nerve" and "General Office Procedure." Fifty-two physicians were registered in the section for the instruction course.

Dr. H. I. Spector, St. Louis, on joint invitation of the Kansas State Board of Health, the Kansas Tuberculosis and Health Society and the Kansas Medical Society, was the guest of the Shawnee County Medical Society in Topeka on April 14, the Labette County Medical Society in Parsons on April 15, the Sedgwick County Medical Society in Wichita on April 16 and the Saline County Medical Society in Salina on April 17. His subject was "Diagnosis, Differential Diagnosis and Treatment of Pulmonary Tuberculosis."

Beginning in May the Metropolitan Life Insurance Company launched a nation-wide program on diabetes. The reasons which prompted the program are given by the company as (1) the incidence of diabetes seems to be increasing; (2) recent surveys suggest that there are thousands of persons with undiagnosed diabetes, and (3) rapid advances have been made in fundamental knowledge and treatment of the disease. The program will include a motion picture entitled "The Education of Diabetic Patients," a series of lantern slides illustrating in detail the pathology, treatment and complications of diabetes, a diabetic laboratory and an exhibit in panel form showing record forms for use in office, hospital and in the instruction of patients. This

material is available for showing at medical meetings and application may be made to the George F. Baker Clinic, Boston, Massachusetts, or to the Welfare Division, Metropolitan Life Insurance Company, New York.

The next examination for appointments as Assistant Surgeon, U. S. Navy, will be held at all major Naval Medical Department activities August 11 to 15. Applications for this examination must be in the Bureau of Medicine and Surgery not later than July 15. An examination for appointment as Acting Assistant Surgeon for intern training in Naval Hospitals will be held at all major Naval Medical Department activities June 23 to 26. Full information may be obtained by addressing the Bureau of Medicine and Surgery, Navy Department, Washington, D. C.

The Southern Medical Association sponsored the program at the St. Louis Medical Society, May 13. Dr. Vincent W. Archer, Charlottesville, Virginia, spoke on "Clinical Indications for Special Technics in Gastrointestinal Examinations"; Dr. Paul H. Ringer, Asheville, North Carolina, President, Southern Medical Association, spoke on "Prognosis in Pulmonary Tuberculosis," and Dr. Arthur T. McCormack, Louisville, Kentucky, immediate Past President, Southern Medical Association, spoke on "Medicine Today and Tomorrow in the National Emergency." The Southern Medical Association was host to chairmen of committees on arrangements for the meeting of the Association in St. Louis, November 11 to 14, at a dinner preceding the program and to members of the St. Louis Medical Society at a social hour following the program.

Eighty-nine items of the Paracelsus Collection of the St. Louis Medical Society formed the basis of an exhibit at the seventeenth annual meeting of the American Association of the History of Medicine at Atlantic City, May 4, 5 and 6. These were displayed with charts and many illustrations mounted by the Institute of Medical History of the Johns Hopkins University. On May 6, Dr. Robert Schlueter, St. Louis, on invitation of the officers of the association, presided at a symposium of four appropriate papers by acknowledged medico-historical authorities in commemoration of the four hundredth anniversary of the death of Paracelsus. The Paracelsus Collection of the St. Louis Medical Society was presented to the Society by Dr. Schlueter in 1939 who had assembled it through many years of collecting. It is the largest of two Paracelsus collections in this country. The other, that of the late Dr. Constatine Hering, is in the library of the Hahnemann Medical College, Philadelphia. The exhibit as shown at Atlantic City has been promised to the Library of the St. Louis Medical Society for the forthcoming meeting of the Southern Medical Association.

Hospital Day for Missouri was observed on May 12 with many sections of the state sponsoring addresses before civic groups, radio addresses and open house at many institutions. This day, observed throughout the country, marks the one hundred twenty-first anniversary of the birth of Florence Nightingale. Gov. Forrest C. Donnell issued the following proclamation setting aside the day:

WHEREAS, It is most fitting that one day of each year should be set aside in honor of the hospitals which every day in the year minister to the needs of the people of this state, and

WHEREAS, May 12 has been designated as National Hospital Day for similar observances throughout the nation, and

WHEREAS, The observance this year marks the 121st anniversary of the birth of Florence Nightingale whose life-long devotion to the care of the sick and needy gave impetus to the development of modern hospitalization and nursing services, and

WHEREAS, Our State of Missouri has recently made available great scientific institutions for the treatment of trachoma and cancer, and

WHEREAS, I am confident of the part our hospitals will play in national defense,

Now, therefore, I, Forrest C. Donnell, Governor of Missouri, do hereby designate Monday, May 12, 1941, as Missouri Hospital Day and urge all citizens to participate in such local observances as may be arranged in their respective communities in behalf of this benevolent and humanitarian movement.

IN WITNESS WHEREOF, I have hereunto subscribed my name and caused the great seal of the State of Missouri to be affixed at Jefferson City, this twenty-third day of April in the year of our Lord One Thousand Nine Hundred and Forty-One.

## ORGANIZATION ACTIVITIES

### NATIONAL YOUTH ADMINISTRATION PHYSICAL EXAMINATIONS

As soon as some of the results of Service Selectee Examinations became known, argument about the state of health of the nation arose. Some persons apparently were "plugging" for national health plans. Other persons with good opportunities for careful observation have shown that never in the history of our country has the general health been as good; however, it is true there do exist among the young people many physical impairments which if unchecked or uncorrected may lead to serious defects later.

As a part of the defense program a serious attempt to discover and remedy some of these health impairments is now under way. Most of the common remediable defects are to be found in the course of ear, eye, nose and throat and teeth examinations. The National Youth Administration is undertaking to make a complete health audit of its members.

There are in Missouri about 40,000 youths between the ages of 17 and 25 who may be examined. It is proposed to examine from 16,000 to 17,000 im-

mediately. The importance of this can be seen clearly. From this group will come men for the services, for industry, women for shops and homes. Anything to help them face and perform the arduous duties they have ahead will be worth while. Youths who are found to have physical handicaps may be helped or trained in work which is suitable for them.

Missouri is fortunate in that the director of this health service is a physician. There are only three physician state directors in the United States. A program for examination has been set up and is now under way in almost all sections of the state. Physicians asked to serve in the examination centers are paid for their services. The pay compares favorably with salaries paid for similar work, either private or tax supported. The examination schedule is set up to enable good work. Enough time is allotted for each examination and provision is made for specialists whenever possible. This is a serious attempt to handle a big problem.

The medical profession as a whole is cooperating well in this work. It should be a challenge to the profession. For many years there has been a "hue and cry" for a periodic health or a preclinical examination. The profession has asked to examine people who apparently are in good health. Now comes the opportunity to introduce thousands of youths about to start building health habits of a life-time to such a procedure.

Dr. Herbert L. Mantz, Kansas City, has been appointed liaison agent between the Missouri State Medical Association and the National Youth Administration officials. As the work progresses, experience will dictate changes and improvements. No doubt questions will arise and in some places there are certain to be critics. Complaints or suggestions for improvements from members should be sent immediately to the National Youth Administration liaison agent, Missouri State Medical Association. The officials in charge of this work wish to make this a complete success and they realize that to do this they must have the complete cooperation of the entire medical profession. On the other hand, it is believed that if the medical profession gives its cooperation, medicine will be benefited greatly.

## MISCELLANY

### 1941 LEGISLATION

House Bill No. 495, introduced March 26 by Representative Still, which was printed in full on page 182 of the May issue of *THE JOURNAL*, was referred to the Committee on Public Health with probable hearing on May 27.

House Bill No. 192. Prohibiting the taking of examinations to practice any branch of the healing art except after examination in the Basic Sciences, Anatomy, Physiology, Chemistry, Bacteriology and Pathology by a state board of examiners.

This bill was referred to the Committee on Public Health with probable hearing on May 27.

House Bill No. 193. Prohibiting the use by any person licensed to practice medicine, surgery, dentistry, optometry, osteopathy, chiropractic, chiropody or veterinary surgery, or any two or more of such professions, and any person permitted to practice the curing, healing or remedying of ailments, defects of diseases of body or mind, from using the prefix "Doctor" or "Dr." in connection with his name in any letter, business card, advertisement, prescription blank, sign or public listing or display without affixing thereto suitable words or letters designating the degree held and representing the profession he is authorized to practice, making violation of the Act a misdemeanor and fixing the punishment therefor, and providing that the Act shall not apply to the use of said designation by doctors of letters, doctors of science, doctors of law, doctors of divinity, or doctors of philosophy not practicing the curing, healing or remedying of bodily or mental ailments, defects or diseases.

This bill was passed by the House amended to exempt any person holding any honorary academic degree granted by any recognized school, college or university. In the Senate the bill was referred to the Committee on Public Health.

House Bill No. 194. Amending Section 9983, Article 1, Chapter 59, of the Revised Statutes of Missouri, 1939, relating to the examination and qualifications of applicants to practice medicine or surgery in this state by omitting the period after the word "equivalent" in line 15 of said Section and by inserting at the end of said line the following: "and satisfactory evidence of completion of premedical education consisting of a minimum of 60 semester hours of college credit in acceptable subjects from a reputable college or university approved by said Board."

This bill was passed by the House on April 16 and in the Senate was referred to the Committee on Public Health.

House Bill No. 201. Requiring every person licensed to practice medicine or surgery in this State to register biennially with the State Board of Health, providing for the method of application and the fees for such registration, the issuance of certificates of registration, and display of the same, requiring the State Board of Health to be notified of changes in the location of the registrant's office, requiring retired licensed practitioners of medicine and surgery to file affidavits with the State Board of Health in lieu of annual registration, providing for the disposal of registration fees and penalties for failure to register. (Registration fee \$1.00 per biennium.)

This bill was passed by the House on April 17 and in the Senate was referred to the Committee on Public Health.

Senate Bill No. 15. Introduced by Senator Allen McReynolds, Carthage. To further the control of congenital syphilis by requiring a serological blood test for syphilis in pregnant women, requiring the filling out of reports to the State Department of Health, setting up supervisions necessary to protect the health of the mother and child, and provide a penalty for failure or refusal to observe the law.

The committee recommended this bill do pass on March 26. It is on Informal Calendar for third reading and passage.

Senate Bill No. 37. Introduced by Senator Michael Kinney, St. Louis. Providing for medical examination for venereal diseases of applicants for a marriage license and providing rules and regulations by the State Board of Health.

This bill was referred to the Committee on Public Health on February 20.

Senate Bill No. 7 was passed by the Senate. This bill provides for liens in favor of public and charity supported private hospitals, clinics and other institutions for the care of the sick, furnishing care, treatment and

maintenance to persons injured by the negligence or wrongful act of others, upon the rights of action, claims or demands of such injured person against the persons causing such injury, for damage on account of such injury, and upon the proceeds of any settlement of any such right of action, claim or demand; and providing for notice of and the enforcement of such liens.

The Judiciary Committee of the House reported do pass on the bill with three amendments on April 16. It is on the calendar for third reading and passage.

An amendment to Senate Bill 516 providing for osteopaths to practice in all Missouri county hospitals was killed by the Committee on Ways and Means of the House subsequent to a hearing on May 14.

### DOCTORS FOR BRITAIN

More than five hundred applications in response to the request of the British Red Cross to the American Red Cross in April for one thousand physicians to serve in Great Britain had been received by May 2 when the Subcommittee on Medical Personnel for Britain of the National Research Council met in Chicago. The reaction to the appeal for physicians by various governmental departments and organizations in this country was expressed by the President of the United States who said:

The British Red Cross has appealed through the American Red Cross for up to one thousand young American doctors to help it meet an acute shortage of doctors in British military and civilian hospitals. As President of the American Red Cross, I heartily approve this request. When the British appeal came to my attention, I asked the opinions of the surgeon generals of the Army, Navy and Public Health Service. They joined me in believing we should encourage eligible American doctors to volunteer for this humanitarian service with our British friends. I also am informed that the Division of Medical Sciences of the National Research Council, the American Medical Association, the American College of Surgeons and the American College of Physicians have offered their assistance to the American Red Cross in meeting this emergency. The young doctors whom Great Britain so desperately need can do much to heal the wounds inflicted alike upon civilians and military in this cruel war. Those who volunteer will be enrolled by the British Red Cross and will work under the protection of the Red Cross Treaty of Geneva, a covenant which has been respected by the belligerents since 1864. To any American doctor who is eligible and able to go, service in this cause presents a splendid opportunity.

Applicants must be citizens of the United States, unmarried or without dependents and no more than 40 years of age for service with the Royal Army Medical Corps, nor more than 45 years old for appointments to the Emergency Medical Service. Applicants must be graduates of class A medical schools in Canada or the United States and must have at least one year of clinical hospital training in an approved institution. Service candidates must have been in practice at least five years and not more than ten years. All applicants will be required to pass a stringent physical examination.

Doctors accepted for service with the RAMC will be commissioned as lieutenants with remuneration at approximately \$1,456.50 annually. At the end of twelve months of satisfactory service they will be promoted to the rank of captain with annual pay of approximately \$1,800. At the end of each year of satisfactory service lieutenants will receive a bonus of approximately \$402.50 and captains \$603.75. Promotions beyond the rank of captain will be upon general merit. The minimum tenure of service is one year, the contract to be renewable each successive year. Accepted candidates will not lose their citizenship.

Volunteers accepted by the RAMC are liable for service wherever British troops are located, mainly in Europe, Africa and Asia. Assignment to any particular place cannot be guaranteed, although wishes of applicants will be considered. They may be required to serve as medical officers in charge of native troops and, if serving in India, may be required to serve under Indian medical officers. In addition to regimental medical units, assignments will be to field ambulance units,

motor ambulance convoys, casualty clearing stations, ambulance trains, general hospitals, convalescent depots, hospital ships and units serving with stationary troops such as anti-aircraft formations.

Full information concerning "Doctors for Britain" can be obtained from the Red Cross National Headquarters, Washington, D. C.

### THE TWO ESSENTIALS FOR AMERICAN MEDICINE

In an attempt to explain the implications of the Federal prosecution of the American Medical Association, the National Physicians Committee for the Extension of the Medical Service has issued a booklet under the title "The Two Essentials for American Medicine." The text of the booklet follows:

#### The First Essential, an Authorized Code of Conduct

On Friday, April 4, a Federal jury in Washington, D. C., found the American Medical Association guilty of "a criminal conspiracy to restrain trade."

The jury exonerated five officials of the A.M.A. and fourteen distinguished physicians of the District of Columbia.

Practically, this verdict is without precedent and, ultimately, it may vitally affect every practicing physician in the United States. It is essential to the continued effectiveness of American medicine that physicians—every physician—understand and be concerned about the verdict of this jury and the meaning and implication of the issues involved in this unprecedented prosecution.

In effect, the Federal jury found that: Organized medicine had entered into a conspiracy—a criminal conspiracy—but that there were no conspirators. A crime had been committed—but that there were no criminals. Trade had been unlawfully restrained—but that there were none responsible for the restraint.

As far as a settlement of the issues is concerned, the verdict is without sense or substance or meaning. However, as the trial progressed and the evidence was presented by the attorneys for the prosecution, the issues were clarified and defined and the purpose and objectives of the prosecution became apparent. The attainment of these objectives would destroy the structure and pattern of medical service as it has been known and accepted in the United States.

Some of the issues involved in this Federal court action are: (a) The exclusive right of physicians to "practice medicine." Presumably, a layman or a lay organization should have the legal right to provide medical service. (b) The right of physicians to control or influence the qualifications of physicians on hospital staffs or the qualifications of physicians to be granted courtesy privileges in hospitals. (c) The right of physicians to control or importantly influence conditions in hospitals under which intern training is provided. (d) The right of physicians to determine educational and ethical standards that shall qualify individuals for the rendering of medical service.

These are basic rights. They are essential to the safeguarding of the public. They are so fundamental that they have been accepted without concern or question.

#### Controls—Voluntary

Tediously, step by step, over a period of more than a century, American medicine evolved and established codes and principles which governed the providing of medical service.

In the establishment of the principles, no legal authority was involved. There has been no compulsion in the controls. They were voluntary. They became operative and effective because they answered a need and worked successfully.

### Legality Questioned

Now, the legality of these codes and principles has been questioned. The final legal solution will affect every practicing physician in the United States.

If it is finally determined that laymen or lay organizations have a legal right to provide medical service, the entire structure of medicine—as we know it—can be destroyed.

If qualified doctors of medicine sacrifice the right to determine or influence the qualifications of hospital staffs and courtesy privilege physicians, they will be placed in direct competition and on a par with the osteopaths, the chiropractors, and the naturopaths who may seek privileges in the hospitals.

If doctors of medicine are denied the right to determine or importantly influence the educational standards for medical students, and the nature and quality of intern training, the quality and standards of medical service are placed in jeopardy. The final result will be an army of quacks with the individuals competing in the open market for the patronage of the ailing and the sick.

Practically, it is unthinkable! It is essential to the continued effectiveness of American medicine that physicians—the rank and file of physicians—every physician—understand the basic nature of the decisions that must be reached and aid in effecting a sane and constructive solution of the problem.

### Two Parts to Solution

There are two parts—two equally important parts—to the solution:

First, American medicine must be given authority from the court of final jurisdiction, for a code of conduct. This authorization must define the areas wherein controls can be established. It must define the extent and the nature of such controls.

The next step in the process of securing this authorization is a new trial of the A.M.A. suit in the Federal District Court, or an appeal to the Appellate Court and finally an appeal, if necessary, to the Supreme Court of the United States.

This is the responsibility of the A.M.A. Already, the necessary steps have been taken. Regardless of time, energy or expense involved, there will be no retreat or compromise until all of the issues have been settled by the authority with final jurisdiction.

Second, the public must be made aware of its vital interest in this all important issue.

In the final analysis, the public's opinion of the quality and effectiveness of medical service will become the deciding factor in the settlement of the problem.

The public is uninformed. Without knowledge it is not competent to render an impartial decision. The public must be enlightened on the facts and this is the gigantic task and the tremendous responsibility of the National Physicians' Committee for the Extension of Medical Service.

The extent of its effectiveness will be determined by the degree of the support volunteered by county medical societies and the rank and file of practicing physicians.

### The Second Essential, the Maximum Distribution of Effective Medical Service

In every section of the United States, physicians are vitally interested in and concerned about providing adequate and effective medical service for (a) the indigent and the needy, and (b) all in the lower income groups.

In California, Michigan, New York, New Jersey and Texas, attempts are being made to provide state-wide service, on a prepayment basis, under medical association auspices. The Wisconsin and Minnesota legislatures have passed enabling acts making possible the

extension of such a service. Since January 1, 1941, two state societies—Ohio and Tennessee—have sponsored similar legislation.

These and other efforts in practically every state provide conclusive evidence of organized medicine's awareness of the need and its determination to provide for all a truly effective service.

These efforts must be encouraged to the utmost. Always the quality of service must be insured. On the basis of experience extending over a period of more than one hundred years, it is known that this multiplicity of efforts by medical societies and individual physicians will provide ultimately and quickly the most effective possible remedy.

To insure the utmost in results, the related facts must be kept constantly in mind:

1. American medicine, under the system of independent practice and self-discipline and control, has developed and provided the most effective and most widely distributed medical service ever known in the world.

2. There is no panacea for the general problem of providing medical care—the need varies according to conditions and types of populations.

3. There is a well defined and powerful group which seeks to remove the control of medical service from physicians and place it in the hands of political groups regardless of the quality and effectiveness of the service to the public.

4. The first and most essential requirement in providing adequate medical care is an understanding, on the part of the public, of the constituent elements of a satisfactory service.

So all-important is this fourth factor that the final decision on all of the issues will be determined by the degree of success attending the efforts of the medical profession in enlightening the public in connection with: (1) its aims and methods, (2) the extent of its progress, (3) the nature and meaning of its achievements in terms of public benefit, (4) the weaknesses and inadequacies of other methods or systems, and (5) its interest in the problem of health and medical service.

### War

The world is at war. It is an all-out war involving issues of cosmic proportions. The medical profession's first obligation is to make its contribution to national defense and the safeguarding of national integrity and ideals.

We are faced with drastic—even revolutionary—changes in our social and economic structures. Under any circumstances, medicine must mesh with and serve under the new conditions resulting from these revolutionary changes.

However, the real danger and the ever present menace is in the efforts that have been and may be made to force revolutionary changes in our system of medical service under the subterfuge of a contribution based on war time needs.

During its first twelve months of operation, N.P.C. provided evidence of support that secured a statement of public policy from the President of the United States. In his speech on October 31 at Bethesda, Maryland, dedicating the National Institute of Health, President Roosevelt said:

*"Neither the American people nor their government intend to socialize medical practice any more than they plan to socialize industry. In American life the family doctor, the general practitioner, performs a service which we rely upon and trust.*

*"No one has a greater appreciation than I of the skill and self sacrifice of the medical profession. And there can be no substitute for the personal relationship between doctor and patient which is a characteristic and a source of strength of medical practice in our land."*

It is the task of N.P.C. to continue to provide evidence

of understanding and public approval in order to insure that changes are effected only within the limits of this publicly expressed policy. The accomplishment of this purpose necessitates the understanding, the cooperation and the financial support of every county medical society and the rank and file of the profession.

Every week, out of the office of N.P.C., go editorial releases to more than 12,000 newspapers with a potential readership of more than forty million weekly readers.

An extension and intensification of such efforts will provide the one finally effective means of preserving the independence of the medical profession and safeguarding the interests of the public in relation to health and the quality of medical service.

## BOOKS FOR LEISURE MOMENTS

### RAMPAGING PESTILENCE

In sure sweeping strokes Geddes Smith follows the havoc of pestilence stalking across country after country, unhampered by man's puny efforts until the last century. "Plague on Us" (The Commonwealth Fund, New York) is primarily addressed to the intelligent layman but should be on the must list of every physician concerned with scientific accomplishment against disease; not alone because it describes methods which have been successful in the eradication of disease but also because it points out the vast field left for future accomplishment.

Smith takes pains to point out that declining morbidity and mortality rates for the infectious diseases are only in small part the result of medical investigation. Influenza in 1920 killed an extra hundred thousand citizens. Tuberculosis was already becoming a less deadly disease before Robert Koch discovered its cause. Pneumonia deaths declined in New York State (where the phenomenon has been subject to analysis) to an extent greater than could be attributed merely to sera and new drugs. Diphtheria, scarlet fever, measles, these and other diseases are less frequent and less deadly largely because there has been a natural attenuation of their causes. On the other hand, typhoid and kindred ills are fewer because there is better and more sanitation.

Against the variety of forms of encephalitis and kindred infections of the nervous system little more can be done today than Governor Clinton did in 1793 when he quarantined New York against shipping from yellow fever stricken Philadelphia. When plague broke out in San Francisco in 1920, isolation of the infected area stopped the threatened epidemic but plague did break out. There is much more to be done as American medicine continues its fight against disease. Geddes Smith has provided a stimulating account of what has been done. He has indicated the fields for new research.

B. Y. G.

### STABILIZING THE CHILD

William Moodie, Medical Director of the London Child Guidance Clinic, is the author of a singularly direct, useful volume entitled "The Doctor and the Difficult Child" (Commonwealth Fund, New York). In fifty pages he enumerates the factors having to do with the development of a stable personality, according to whether it has to do with work, security or affection. Around them as a basis he elaborates the thesis that good emotional growth is possible. He draws upon his vast experience to illustrate the detrimental effect of specific environmental deficiencies in each of these categories. He presents a convincing plea for more

attention to those intangible essentials to the nurture of the child to the end that the child become more self-efficient.

The second part of this small book presents the eighteen most common complaints which cause teachers or parents to send children for psychiatric assistance, all of them possibly manifestations of normal development. The cause must be differentiated to determine whether the symptoms require remedial measures because they arise in a feeling of emotional insecurity or block. In an occasional instance there may be no need for psychiatric care except insofar as the parent is reassured. More commonly, however, expert guidance at the time of the early manifestation of delinquency may restore the child to social usefulness and acceptability.

Sound common sense pervades the volume. The writing is clear and pointed. Social consciousness is strong throughout. Simple analytical methods are advised. This book should be in the library of any physician interested in the developing child.

B. Y. G.

### TO FIND MARITAL BLISS

Paul Popenoe, General Director of the American Institute of Family Relations, in Los Angeles, is one of the few outstanding experts in the difficult field of adjusting two divergent personalities so that they find happiness in marriage. Therefore much is to be expected of "Modern Marriage; A Handbook for Men" (The Macmillan Company, New York).

The author has been thoughtful in the preparation of his thesis. He has collected statistics, chiefly through the efforts of his research students. Unfortunately there are some glaring disagreements between his findings and those of other students of marital problems. Nonetheless his advice is sound, even axiomatic; for example, divorce is not a solution of difficulties but a running away from them.

The general style of the volume tends toward the flippant; that is the only serious adverse criticism that can be drawn against it.

The whole purpose of the author is expressed in his last sentence: "I cannot recall ever hearing of a parent who, after successfully bringing up a worthy family, on looking back over his achievement, express any regret over a misspent life."

B. Y. G.

### FUTURE PORTENTS

The collaborators in "The Neuroses in War" (The Macmillan Company, New York) suggest that the absence of trained discipline in the civilian is likely to lead to even greater degrees of emotional disintegration than in the well schooled soldier.

Under the general editorship of Emanuel Miller, ten English psychiatrists, most of them connected with the Tavistock Clinic, discuss the effect of armed combat upon the psychic. Much time and some men were lost in World War I because the psychiatric service was unorganized. From that experience there emerged certain well-defined methods of treating the soldier temporarily disabled by other than physical causes. The complexity of the problem is well portrayed in a quotation taken from the U. S. A. Medical History of World War, Volume X: "The resources to be employed include psychological analysis, persuasion, sympathy, discipline, hypnotism, ridicule, encouragement and severity. All are dangerous or useless in the hands of the uninformed, as the number of 'shell-shock' cases treated in general hospitals testify. In the hands of men capable of forming a correct estimate of the make-up of such patients and employing these resources with reference to the therapeutic problems presented in each case, they are powerful aids."

B. Y. G.

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL  
MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

Chariton County Medical Society, December 2, 1940.  
Montgomery County Medical Society, December 2, 1940.  
Perry County Medical Society, December 14, 1940.  
Ste. Genevieve County Medical Society, December 17, 1940.  
Howard County Medical Society, January 2, 1941.  
Camden County Medical Society, January 7, 1941.  
Andrew County Medical Society, January 9, 1941.  
Benton County Medical Society, January 28, 1941.  
Clinton County Medical Society, February 6, 1941.  
Holt County Medical Society, February 8, 1941.  
Macon County Medical Society, February 15, 1941.  
Moniteau County Medical Society, February 15, 1941.  
Mercer County Medical Society, March 12, 1941.  
Dallas-Hickory-Polk County Medical Society, April 4, 1941.  
Miller County Medical Society, April 4, 1941.  
Morgan County Medical Society, April 5, 1941.  
Johnson County Medical Society, April 11, 1941.

ASSOCIATE EDITORS: COUNCILORS OF THE  
TEN COUNCILOR DISTRICTS

#### FIRST COUNCILOR DISTRICT

A. S. BRISTOW, PRINCETON, COUNCILOR

Nodaway-Atchison-Gentry-Worth Counties  
Medical Society

The Nodaway-Atchison-Gentry-Worth Counties Medical Society held its final session before the summer interim as a dinner meeting at the Linville Hotel, Maryville, May 5, with the president, Dr. Samuel E. Simpson, Stanberry, presiding.

Members present were Drs. Francis R. Anthony, Charles T. Bell, J. A. Bloomer, Carlos E. Cossins, Hiram Day, Leslie E. Dean, Loren E. Egley, W. R. Jackson, Robert C. Person and William M. Wallis, Jr., Maryville;

Joseph C. Manning, Skidmore; Eugene Crowson, Pickering; Charles W. Kirk, Hopkins; J. M. Boyles, Conception Junction; B. F. Byland, Burlington Junction; Charles D. Humbert, Barnard; Henry C. Bauman, Fairfax; Emmett B. Settle, Rock Port; John M. Davis, Charles H. Flynn and Clifton W. Waugh, Tarkio; Samuel E. Simpson, Stanberry; Mark H. Rhoads, King City. Guests present were Drs. L. E. Eckles, Topeka, Kansas, and W. Logan Wood, Bolckow.

Dr. Emmett B. Settle, Rock Port, chairman of the program committee, announced that a "Play Day" similar to one held last August 21 would probably be held late this summer. The next regular meeting of the Society, on October 6, will be held in conjunction with a District Dental Society meeting. The program for the November meeting will be furnished by the Department of Surgery of the Mayo Clinic and that for the December meeting by the Department of Obstetrics of the University of Kansas School of Medicine.

Dr. L. E. Eckles, Topeka, Kansas, pediatrician to the St. Francis, Christ and Stormont hospitals, and associate editor of the *Journal of the Kansas Medical Society*, read a most practical paper on "Convulsions in Childhood" with special attention to etiology and treatment. His paper was discussed by Drs. Charles H. Flynn and Clifton W. Waugh, Tarkio, and Charles D. Humbert, Barnard.

Dr. B. F. Byland, Burlington Junction, gave a report on the Annual Session of the Missouri State Medical Association discussing the business which was transacted and high lights of the scientific papers which were read and commending highly the commercial exhibits.

CHARLES D. HUMBERD, M.D., Secretary.

#### FIFTH COUNCILOR DISTRICT

W. A. BLOOM, FAYETTE, COUNCILOR

Cooper County Medical Society

The Cooper County Medical Society met at St. Joseph's Hospital, Boonville, April 17. Dr. G. L. Chamberlain, New Franklin, presided.

The following officers were elected: President, Dr. T. C. Beckett, Boonville; vice president, Dr. W. H. Ziegler, Boonville; secretary, Dr. J. C. Tinch, Boonville; delegate, Dr. A. C. H. Van Ravenswaay, Boonville; alternate, Dr. M. S. McGuire, Boonville.

Members present were Drs. G. L. Chamberlain, New Franklin; A. C. H. Van Ravenswaay, T. C. Beckett, W. H. Ziegler, George Blankenship, M. S. McGuire, J. C. Tinch and G. W. Winn, Boonville.

J. C. TINCH, M.D., Secretary.

#### NINTH COUNCILOR DISTRICT

ELDON C. BOHRER, WEST PLAINS, COUNCILOR

South Central Counties Medical Society

The South Central Counties Medical Society met at dinner at the Horton Hotel, Willow Springs, April 10.

The following were present: Lt. Col. W. L. Gist, Col. Hans Schaerrer, Dr. Thomas J. Kelly and Dr. John W. Williams, Jr., Jefferson City; Drs. H. B. Hull, Mammoth Springs, Arkansas; A. H. Thornburgh and E. C. Bohrer, West Plains; C. F. Callihan, Willow Springs; L. M. Dillman, Houston; R. W. Denney, H. G. Frame, A. C. Ames and R. A. Ryan, Mountain Grove; F. A. Barnes, Thayer; J. B. McDaniels, Summersville; J. A. Fuson, Mansfield; J. R. Mott, Hartville; Leslie C. Randall, Licking; R. M. Norman, Ava, and L. T. Van Noy, Norwood.

Lt. Col. W. L. Gist, Jefferson City, discussed selective service.

Dr. John W. Williams, Jefferson City, spoke on health problems.

A round table discussion on the two subjects presented followed.

L. M. DILLMAN, M.D., Secretary.

### TENTH COUNCILOR DISTRICT

C. E. FALLET, DE SOTO, COUNCILOR

St. Francois-Iron-Madison-Washington-Reynolds  
County Medical Society

The St. Francois-Iron-Madison-Washington-Reynolds County Medical Society met at the St. Francois County Courthouse, Farmington, April 18, at 7:30 p. m.

Dr. Robert Britt, St. Louis, gave an interesting discussion on "The Diagnosis of Neurological Conditions in General Practice" using cases from the State Hospital to demonstrate his lecture.

Following a business meeting the following officers were elected: President, Dr. Van W. Taylor, Bonne Terre; vice president, Dr. J. L. Thurman, Potosi; secretary-treasurer, Dr. C. C. Ault, Farmington.

Members present were Drs. Marvin T. Haw, H. M. Roeber, D. E. Smith, Van W. Taylor, Bonne Terre; Reuben Appleberry, F. R. Crouch, N. W. Hawkins, Emmett F. Hootor, G. Tivis Graves, Ralph Kuhlman and C. C. Ault, Farmington; C. H. Appleberry, Flat River; Harry W. Barron, Fredericktown; J. L. Thurman, Potosi.

C. C. AULT, M.D., Secretary.

## WOMAN'S AUXILIARY

### WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

19th Annual Meeting, Cleveland

President, Mrs. V. E. Holcombe, Charleston, W. Va.  
President-Elect, Mrs. R. E. Mosiman, Seattle, Wash.

### WOMAN'S AUXILIARY TO THE MISSOURI STATE MEDICAL ASSOCIATION

President, Mrs. James J. Drace, Cape Girardeau.  
President-Elect, Mrs. Frank L. Davis, St. Louis.  
Adviser, Dr. Herbert L. Mantz, Kansas City.

The 17th annual meeting of the Woman's Auxiliary to the Missouri State Medical Association, held April 29 and 30 in St. Louis, had an attendance of 176 women. The program was carried out as printed, and the usual reports of officers and chairmen were given. More county reports than usual were filed and showed fine work done.

Mrs. S. P. Howard, Jefferson City, president, presided at the preconvention board meeting, the general session and the luncheon. In her annual report she mentioned that she had held three meetings of the executive board, had visited fifteen auxiliaries, had attended the national convention in New York, had attended the national board meeting in Chicago and the regional meeting of the Woman's Field Army in Kansas City. To do this she had traveled 7,500 miles. She had also written many letters and articles.

After a thorough knowledge of conditions in the Auxiliary Mrs. Howard recommended the following: that the social side of the Auxiliary should not be neglected, that public relations should be strengthened, that *Hygeia* be placed in schools and libraries; that more Missouri Auxiliary members should take the national *Bulletin*, that the Auxiliary publicize the national

broadcasts of the A.M.A., that the auxiliaries support the health essay contests, that every Auxiliary woman do what she could for national defense and a revision of the by-laws. She also recommended that the state meeting be held on Mondays and Tuesdays. This recommendation was made by the Adviser to the Auxiliary.

Mrs. J. B. McCubbin, Fulton, treasurer, reported that 961 current members had paid dues and 73 had paid dues in arrears. Mrs. Frank L. Davis, St. Louis, reported that there are no new auxiliaries but the nineteen already organized showed a gain of 36 new members.

There were eleven public relations meetings held with an estimated attendance of 2,500, but the Auxiliary had taken part in other public health meetings with approximately 15,000 in attendance.

Fine work was reported in securing subscriptions to *Hygeia*, and Mrs. C. H. Werner, St. Joseph, state *Hygeia* chairman, and the local auxiliaries won three state prizes. However, the state quota was not quite reached.

There were fewer essays written than usual although \$60.00 was given in prizes and carefully selected material was sent to the schools.

A six foot plaque of a doctor and his wife, hand in hand, serving humanity, was exhibited. Credit for securing this is due Mrs. Richard P. Dorris, Jefferson City, Archives chairman.

The newly elected officers are: President, Mrs. James J. Drace, Cape Girardeau; president-elect, Mrs. Frank L. Davis, St. Louis; vice presidents, Mrs. R. C. Haynes, Marshall, Mrs. Cecil G. Leitch, Kansas City, Mrs. Donald Dowell, Chillicothe, and Mrs. G. A. Lau, St. Joseph; recording secretary, Mrs. E. J. Schwartz, Springfield; corresponding secretary, Mrs. G. B. Schulz, Cape Girardeau; treasurer, Mrs. M. E. Cooper, Columbia; auditor, Mrs. J. B. McCubbin, Fulton; one year directors, Mrs. F. T. H'Doubler, Springfield, Mrs. Orval Withers, Kansas City, Mrs. Cyrus Malette, Crocker, Mrs. J. W. Dawson, Eldorado Springs, Mrs. George W. Griffith, Garden City; two year directors, Mrs. Martin J. Glaser, St. Louis, Mrs. Charles E. Gilliland, Richmond Heights, Mrs. A. H. Horne, Steeleville, Mrs. E. M. Moore, Higginsville, Mrs. R. B. Wray, Nevada.

The officers were installed by Mrs. H. L. Mantz, Kansas City, and Mrs. J. J. Drace, Cape Girardeau, president, made a brief response.

The speakers at the luncheons were Dr. R. B. Denny, Creve Coeur, Dr. S. A. Cosgrove, Jersey City, N. J., and Dr. Harriet Cory, St. Louis.

Mrs. Martin J. Glaser, retiring president of the St. Louis Auxiliary, was convention chairman and she and her committees showed the visitors many courtesies. The formal entertainments included a dinner, a tea at the Leslie Bates Davis Neighborhood House, East St. Louis, two luncheons and a buffet supper. Mrs. Walter G. Kirchner, St. Louis, had an exhibition of oil paintings which was much appreciated.

Mrs. Willard Bartlett, St. Louis, was chosen the first honorary member of the Missouri Auxiliary in recognition of her services in organizing the Missouri Auxiliary.

## BOOK REVIEWS

PRINCIPLES OF SURGICAL CARE SHOCK AND OTHER PROBLEMS. By Arthur Blalock, M.D., Professor of Surgery, Vanderbilt University School of Medicine, Nashville, Tenn. Illustrated. St. Louis: The C. V. Mosby Company. 1940.

The numerous publications dealing with operative procedures have contributed largely to improvement in

technic. All too few are monographs discussing the physiologic causes for successes and failures. For years Blalock has written extensively on shock and allied disturbances upon which he delivered the Beaumont Lectures in 1940. This timely book is a compilation and extension of his writings together with reviews of present day literature.

The relatively large amount of space devoted to shock or peripheral circulatory failure bears testimony to the author's work on the subject. A more detailed handling of certain other chapters such as those on anesthesia and anesthetic agents and postoperative pulmonary complications would be welcome.

A careful perusal of this book will stimulate the surgeon's interest in the principles underlying his work and inevitably result in that widening of the margin of safety which reflects itself in a lowered mortality and a hastened convalescence. P. S. L.

**PHYSIOLOGY IN MODERN MEDICINE, MACLEOD'S.** Edited by Philip Bard, Professor of Physiology, Johns Hopkins University School of Medicine, with the collaboration of Henry C. Bazett, Geo. R. Cowgill, Howard J. Curtis, Harry Eagle, Chalmers L. Gemmill, Magnus I. Gregersen, Roy G. Hoskins, J. M. D. Olmsted, and Carl F. Schmidt. Ninth edition. St. Louis: The C. V. Mosby Company. 1941. Price \$10.00.

The ninth edition of Macleod's "Physiology in Modern Medicine" is more of a textbook in the science of physiology than an advanced physiology intended to bridge the gap between this basic science and clinical practice. Many points in physiology with no present clinical application are stressed. Clinical data has been used only when it illustrates particularly well some fundamental physiological principle.

The book is edited by Professor Philip Bard with the collaboration of nine colleagues. It takes up the various functions of the body such as neuromuscular, special sensory, circulatory, respiratory, metabolic, alimentary, endocrine, water distribution and renal. The index has been enlarged to aid students in reviewing their knowledge. The bibliography is extensive enough and is placed at the end of the book. At the top of each page of bibliography is placed the name of the section of the book to which it refers.

The text throughout is written in a clear and lucid style. The illustrations are well chosen and integrated with the text. The proportionate allotment of space to the various sections seems well balanced. The one thing lacking is the individuality of Dr. Macleod. L. B.

**MANUAL OF PHYSICAL DIAGNOSIS WITH SPECIAL CONSIDERATION OF THE HEART AND LUNGS.** By Maurice Lewison, M.D., Professor of Physical Diagnosis, University of Illinois College of Medicine, etc., and Ellis B. Freilich, M.D., Associate Professor of Medicine, University of Illinois College of Medicine, etc. In collaboration with George C. Coe, M.D., Instructor of Medicine, University of Illinois College of Medicine, etc. Chicago: The Year Book Publishers, Inc. 1941.

This book, as the name implies, is a short, concise and to the point discussion of the technic and normal and pathologic findings in physical diagnosis. It covers the head, neck, chest, abdomen and extremities with particular emphasis on the thorax. Because of the condensed form and lack of illustrations it is of little use for reference purposes but is a fine memory refresher for one who has become a little rusty on the subject of physical diagnosis.

As in other books of this nature there is a section on history taking and general observation of the patient. This is followed by sections on the respiratory system and cardiovascular system and a discussion of the normal and pathologic signs and the technic of eliciting

the signs and how to interpret them. The final section of the book deals with the abdomen, extremities and reflexes in brief form. It describes the various maneuvers for palpating abdominal viscera. There is an abbreviated discussion of the significance of certain reflexes and a few words on the pathologic conditions one might expect in the abdomen and extremities.

W. M. B.

**AN INTRODUCTION TO DERMATOLOGY.** By Richard L. Sutton, M.D., Sc.D., LL.D., F.R.S. (Edin.), Emeritus Professor of Dermatology, University of Kansas School of Medicine, and Richard L. Sutton, Jr., A.M., M.D., L.R.C.P. (Edin.), Assistant Professor of Dermatology, University of Kansas School of Medicine. With 723 illustrations. Fourth edition. St. Louis: The C. V. Mosby Company. 1941. Price \$9.00.

This popular textbook is no longer an introduction to the subject of dermatology but has grown (fourth edition) considerably to be a worthy offspring of its parent.

In general, the book is a condensation of the 1,549-page "Diseases of the Skin" by the same authors. Some of the rarer dermatoses, reviews of the literature and the microphotographs have been omitted.

Even in its present size the subject matter has been handled to give the reader the last word on diagnosis and treatment. The chapters on the animal and vegetable parasites are perhaps too advanced for the average reader but the authors feel that it is better to overshoot the mark than undershoot.

A welcome addition is the pertinent bibliography which appears at the end of the book.

As an intermediate textbook, it deserves wide popularity. It is well written, the photographs are excellent and numerous and the publishers have contributed good paper and readable type. N. T.

**A TEXTBOOK OF CLINICAL NEUROLOGY.** By J. M. Nielsen, B.S., M.D., F.A.C.P., Associate Clinical Professor of Medicine (Neurology), University of Southern California; Senior Attending Physician (Neurology), Los Angeles County General Hospital; Attending Neurologist, Hospital of the Good Samaritan, Los Angeles, California. With 179 illustrations. New York, London: Paul B. Hoeber, Inc., Medical Book Department of Harper & Brothers. 1941. Price \$6.50.

This is an excellent textbook on neurology. The author indicates that it was written for medical students. However, anyone interested in neuropsychiatry would profit by referring to its pages. Some of the many rather uncommon diseases are discussed briefly but adequately.

An attractive feature is the correlation of anatomic and physiologic principles with the diagnostic symptomatology. Many neurologic syndromes are named after the physician or physicians originating them.

The author has covered quite well the neurologic diseases. Several newer topics, not to be found in older textbooks, have been considered. Among newer subjects are vitamins in relationship to the nervous system and electroencephalography. Sulfanilamide and sulfa-pyridine are given appropriate attention but sulfa-thiazole is not mentioned. A fair amount of space is devoted to traumatic disorders of the central nervous system and conservative treatment especially is recommended.

Epilepsy is divided into jacksonian and idiopathic only, which division would be held inadequate by some research workers.

The author is quite pessimistic regarding the treatment for multiple sclerosis.

A bibliography is appended at the end of each chapter. The references are quite numerous but far from being complete. A. L. S.

**A DIABETIC MANUAL** for the Mutual Use of Doctor and Patient. By Elliott P. Joslin, M.D., Sc.D., Clinical Professor of Medicine Emeritus, Harvard Medical School, Medical Director George F. Baker Clinic at the New England Deaconess Hospital. Seventh edition, thoroughly revised. Illustrated. Philadelphia: Lea & Febiger. 1941. Price \$2.00.

This is the seventh edition of the diabetic manual and the seventeenth edition of a Joslin text. This book brings the newer knowledge of the disease up to date for the patient. In addition to the meticulous direction having to do with the measurement of the diet the chapters deal with such subjects as the marriage of diabetics, the care of the teeth, the prevention of diabetes and acid intoxication. Uppermost in this, as in the author's larger book, is his intense preoccupation with the diabetic child. This 238 page manual should prove just as useful to the diabetic patient as his insulin syringe or his food scales. B. Y. G.

**ELECTROCARDIOGRAPHY IN PRACTICE.** By Ashton Graybiel, M.D., Instructor in Medicine, Courses for Graduates, Harvard Medical School; Research Associate, Fatigue Laboratory, Harvard University, etc., and Paul D. White, M.D., Lecturer in Medicine, Harvard Medical School, etc. With 272 illustrations. Philadelphia and London: W. B. Saunders Company. 1941. Price \$6.00.

During the last decade electrocardiography has been establishing itself gradually as an important adjunct in the diagnosis of cardiac conditions in the practice of medicine.

The general practitioner, however, has not been able to keep posted and develop a satisfactory working knowledge of this important subject. Therefore, when a textbook such as this is presented it fulfills a long felt need. The text is divided into two parts: In the first half, there are arranged in order 142 electrocardiograms illustrating normal variations, the several disorders of rhythm and the etiologic types of heart disease; in the second half, 130 electrocardiograms are presented in a heterogeneous fashion for practice in interpretation, the notes relating to any particular case being on the preceding page. This enables the student to make his own interpretation without prejudice.

The introductory chapters deal with the principles and technic of electrocardiography, the study of the normal heart and the routine of interpretation with ample illustrations and diagrams.

This book is well edited and the photographs are clear cut and well defined. It will serve as an excellent reference book and the reviewer recommends it to the medical student as well as the medical profession. A. C. H.

**PHYSICAL DIAGNOSIS.** By Ralph H. Major, M.D., Professor of Medicine in the University of Kansas. Second Edition. Revised with 437 Illustrations. Philadelphia and London: W. B. Saunders Company. 1940.

The second edition of this work follows the arrangement of the first. The sections on the abdomen, genitalia and extremities have been enlarged and the section on the nervous system has been rewritten. The generous number of illustrations of the first edition has been amplified and gives a distinctive character to the new volume. The illustrations form one of the important means of teaching, elucidating and adding materially to the instructiveness of the text. The author stresses throughout the book the dictum of "see, feel, percuss and listen."

An added value is given to the book by its historical approach to the subject and by a bibliography following each chapter which, without an attempt to be complete, gives a working introduction to the chief sources.

The brief historical introductory chapter is invaluable as a background to the art of physical examination.

W. B.

**TEXTBOOK OF OPHTHALMOLOGY.** By Sir W. Stewart Duke-Elder, M.A., D.Sc. (St. And.), Ph.D. (Lond.), M.D., Ch.B., F.R.C.S., Surgeon Oculist to H. M. The King; Colonel A.M.A. Consulting Ophthalmic Surgeon to the British Army, etc. Vol. III. Diseases of the Inner Eye. With 1,140 illustrations, including 164 in color. St. Louis: The C. V. Mosby Company. 1941. Price \$18.50.

This third volume encompassing diseases of the inner eye is a fitting companion to the first which described the development of the eye and the form and function of the visual apparatus; also to the second which described clinical methods of examination, anomalies of the eyes, general pathological and therapeutic considerations of ocular disease and diseases of the conjunctiva, cornea and sclera.

In this third volume diseases of the uvea, retina, optic nerve, lens, vitreous body, glaucoma and intra-ocular parasites are described in minute detail and with an extensive bibliography. At the present time there is no other English publication which covers the field so thoroughly and so completely. For the ophthalmologist it is practically indispensable and for medical men in other fields it is an ideal reference book. D. B.

**CONGENITAL CLEFT LIP, CLEFT PALATE AND ASSOCIATED NASAL DEFORMITIES.** By Harold Stearns Vaughan, M.D., D.D.S., F.A.C.S., Professor of Clinical Surgery, New York Post-Graduate Medical School, Columbia University, etc. Illustrated with 259 engravings. Philadelphia: Lea & Febiger. 1940. Price \$4.00.

Dr. Vaughan's book presents nothing essentially new but he establishes his point of view in regard to many of the surgical procedures and directs attention to his choice of methods.

The first chapters are devoted to historical data and general considerations. The descriptions are brief. Only the more prominent contributors to this branch of surgery are mentioned. In the section on embryology reference is made to the age long controversy between the followers of Goethe and Albrecht in relation to the derivation of the premaxillary bone. A photograph is given of a case of complete cleft lip and protruding premaxilla which shows three incisors erupted and the prominent bud of the fourth on the left border—a condition supporting Goethe's theory.

Several cases of macrostomia are shown. Some have a definite oblique cleft involvement of the palate. Since 1930 the author states that he has had better results in the repair of complete cleft lips through the use of excess tissue from the alar side to build up the nasal floor—a development of the Collis and Blair operations. He prefers the Thompson operation for incomplete clefts, modification being interlapping of the vermilion border. When the alveolar cleft ridge is more than one half inch wide, approximation is forcefully done and held by wiring.

The author's operation for unilateral cleft lip utilizes some of the principles of the Mirault, Blair and Thompson operations. In his double cleft lip procedure he preserves, as have Brown and Davis, the lower vermilion border of the prolabium. He uses silver wire for alar support passed under the lip and tied down to lead buttons. A Logan bow is used to relieve tension.

A chapter is devoted to secondary operations for cleft lip and associated nasal deformities. Reference is made to valuable procedures employed by recognized plastic surgeons. He shows his own method of shortening a lip which, because of a poorly planned operation for double cleft lip, has come to be too long. Diagrams and photographs are shown depicting various procedures.

The latter half of the book deals with the surgical management of cleft palate. The von Langenbeck technic is described and stressed. The author feels that elimination of dead space above the united flaps is not so necessary as has been indicated by Veau and Axhausen. He states that retraction subsequently occurs. Vaughan advises a secondary operation in such a case of a push back type. He also describes his elongation operation. The Davies-Colly principle is described as valuable in closure of the palate openings under the lip but condemned as a method of closing a complete cleft. The Lane operation also is unapproved. He corrects lateral defects not by the Davies-Colly turn-over flap method but by making a relaxation incision which extends from the anterior end of the defect around the alveolar border to the maxillary tuberosity and pterygo-maxillary sulcus. Then the whole palate is shifted to close the hole. Turn-over flaps from the lip are used for defects in the anterior border of the alveolar ridge with a nasal opening under the lip. Turn-over flaps are used from tissues of the premaxilla and palate proper to close defects between these two.

A description of Vaughan's method of lengthening the palate with the cleft extending through the hard palate and alveolus is given. The cleft is completely closed by the von Langenbeck method. Later it is set back in a series of stages leaving the closure over the cleft intact. This operation is based on the principles of Ganzer and Dorrance. Through the discussions of palate closure the von Langenbeck technic is stressed. In the author's hands the amount of denuded nasal surface is much less than that which Veau describes as occurring. It would seem that the main deletion of raw surface is obtained by more complete suture of the nasal aspect of the velum. The other objection is that the Veau operation cannot be followed with a late push back elongation operation.

A blowing test appliance for testing velopharyngeal closure is described. The relation of orthodontia and prosthesis to cleft palate surgery is discussed.

N. B. S.

#### USE OF IODIZED OIL IN SPINAL COLUMN

From a study of 150 patients, A. W. Marcovich, M.D., A. Earl Walker, M.D., and C. M. Jessico, M.D., Chicago, declare in *The Journal of the American Medical Association* for May 17 that "definite, permanent, clinical ill effects from the intrathecal [into the sheath or membrane enclosing the spinal cord] injection of 2 to 4 cc. of iodized oil [as an outlining substances for the x-ray study of the spinal cord] are extremely rare."

The procedure, known as myelography, has been criticized on the ground that the retained oil in the spinal column is, among other things irritating to the spinal tissue and also that, in addition to immediate reactions, it may produce delayed deleterious effects.

"The increased use of myelography with iodized oil as a diagnostic aid in the sciatic syndrome [sciatic nerve disturbances]," the three men say, "has made imperative a comprehensive examination of the immediate and late effects of the intrathecal injection of iodized oil."

They found that of the group of 150 patients, 46.4 per cent had no adverse reactions and that their temperatures did not rise above 99 F. during the first three days after the injection. The authors say, however, that "Fever was the most common sequel; 29.6 per cent of the patients had a temperature of 99 to 100 F. and 24 per cent over 100 F. The highest temperature noted was 103 F. The fever lasted only twenty-four to forty-eight hours. . . . Other symptoms or signs noted immediately after injection of the iodized oil were headache (23 cases), aggravation of previous symptoms (9 cases),

nausea (2 cases), vomiting (2 cases) and stiff neck (1 case).

"All these symptoms and signs usually subsided within seventy-two hours after the injection of the iodized oil into the spinal canal."

Discussing the late effects of the iodized oil injections the authors say that on reexamination of 47 patients from one month to eleven years following myelography only 1 was found with symptoms that in any way could be attributed to the injection. "Thirty-four of the patients," the physicians state, "were definitely improved or completely recovered. . . . Thirteen of them showed no significant change in their condition. . . ."

#### OBTAINS RELIEF FROM SINUS INFECTIONS

A nasal spray of the sodium salt of sulfathiazole was found to bring greater relief from the symptoms of chronic sinus infection than any other preparation he has used, Frederick Myles Turnbull, M.D., Los Angeles, reports in *The Journal of the American Medical Association* for April 26.

He used the sulfathiazole spray for 47 patients with chronic sinusitis and 40 of them reported definite improvement and relief of symptoms. On 4 of the remaining patients the author has no report; of the 3 reporting no improvement, 2 had hay fever and 1 was fighting an influenza infection and at the present time, he says, is showing improvement.

Of the 40 improved patients, 20 showed an increase in drainage, with definite relief of symptoms (congestion, fulness, heaviness and pressure headaches) and opening of the nasal passages. Twenty reported no increase in discharge, but nevertheless, there was relief of symptoms. None of the 47 complained of sneezing as an aftermath of the treatment. There were no toxic (poisonous) symptoms whatever, even when the solution had been used as a nasal spray over a period of five months.

Dr. Turnbull believes that the results obtained in chronic sinusitis "seem to justify further investigation and would also suggest investigation in other involvements due to staphylococcic infections on account of the solubility of the sodium salt [of sulfathiazole]."

#### NEW CAUSE OF BONE DISEASE REPORTED

What they believe is the first reported case of inflammation of the marrow (osteomyelitis) of the head of the thigh bone due to *Bacterium necrophorum*, an organism which has been found to be the causative agent of such conditions as infection of the blood stream, abscesses of the liver and lungs and inflammations of the joints, is described in *The Journal of the American Medical Association* for May 24 by Fremont A. Chandler, M.D., and Virginia M. Breaks, A.B., Chicago.

The case reported was that of a boy aged 12 years who was admitted to the hospital with draining of the left ear of two weeks' duration and pain in the right hip of three days' duration. The boy eventually recovered. In commenting on the case the two authors say, "The ability of *Bact. necrophorum* in pure culture to invade tissue and to become localized is strikingly demonstrated in the case described. . . . It seems probable in this case that the middle ear was the primary focus [of infection]. . . ."

"The increasing number of infections due to *Bact. necrophorum* reported in the literature and their seriousness of fatal outcome makes their recognition worthy of more consideration. . . . Although this is apparently the first case of its kind reported in the literature, it is probable that this disease process would be found more often if similar studies were made."

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### CANCER OF THE GASTROINTESTINAL TRACT

#### ITS EARLY MANIFESTATIONS

B. R. KIRKLIN, M.D.

ROCHESTER, MINN.

To inaugurate the Carman Lecture, newly established by this organization, is a privilege that I appreciate thoroughly, and I thank you for it. It is highly fitting for you to honor the memory of Russell Carman, for you can rightly claim him as your own. It was here in St. Louis that Carman laid the firm foundations of his brilliant and vastly useful career. Here it was that he became so deeply interested in the diagnostic capabilities of x-rays that he forsook all other aspirations and thenceforth devoted himself exclusively to roentgenology. In St. Louis he first met Albert Miller, who worked beside him through the years and to whom I am indebted for information concerning his friends and colleagues in St. Louis. Inspired and aided here by the lamented Walter Mills and Engelbach and Caulk, and by many others who still live and keenly remember him, Carman became a remarkably skillful roentgenologic diagnostician, so able, indeed, that his repute spread far beyond this city. It was not at all surprising that those distinguished brothers, the Mayos, invited him to join their staff and gave him his coveted opportunity to learn more and more about gastrointestinal diagnosis. That opportunity he improved to the utmost for soon he was recognized as one of the most expert diagnosticians of gastroduodenal disease on this continent and his name now adorns the history of American roentgenology. Of Carman the man, the husky, handsome comrade who fairly beamed with friendly good will, there is no need to speak for you knew him as well as I, and none of us has ceased to regret his passing.

On this occasion it has seemed to me appropriate to talk about the early diagnosis of gastrointestinal

cancer because Russell Carman was particularly interested in cancer of the digestive tract and because the roentgenologic method is particularly efficient in the field of diagnosis for it is the most practicable and most reliable means of disclosing malignant lesions at a time when surgery offers a prospect of cure. However, the major share of credit for the early discovery of cancer does not belong to the roentgenologist but to the clinician, who has the opportunity and the primary responsibility of determining whether the roentgenologic test shall be applied.

Unfortunately, this determination is often difficult to arrive at for many of the small malignant lesions do not give rise to definite and pronounced clinical manifestations. Perhaps most common among signs of beginning cancer is bleeding from the alimentary canal, and this signal for roentgenologic examination should always be heeded. Indications of obstruction are not likely to be disregarded by the clinician, but the really small lesions are not often obstructive. Among adult persons anemia and loss of weight without definitely known cause demand roentgenologic investigation because often cancer is responsible. Subjective symptoms such as epigastric pain or distress, whether related to food or not, and atypical disturbances, however trivial, should not be too hastily ascribed to functional disorders for cancer may be the cause. Furthermore, many early cancers that now pass undetected until too late would be found if the roentgenologic test were prescribed as a routine procedure at every complete clinical examination of adult patients, especially those who are in the so-called cancer decades.

By hard experience and after many annoying surprises, roentgenologists have acquired a sharp realization of what they already knew in principle; namely, that the morphology of cancer varies widely, that although the disease is fundamentally proliferative it is also ulcerative, that malignant lesions range from frank tumors to frank ulcers with innumerable gradations between and, hence, that cancer may resemble almost any of the benign diseases that affect the alimentary canal. However,

Abstract of the first Carman Lecture, read before the St. Louis Medical Society, St. Louis, March 25, 1941.

From the Section on Roentgenology, Mayo Clinic, Rochester, Minn.

it also has been learned that when this resemblance occurs it is usually only superficial and that, as a rule, with certain exceptions presently to be mentioned, the distinction of malignant from benign lesions, however small they may be, can be made rather confidently on the basis of their contrasting roentgenologic characteristics.

For example, small, soft mucoid cancers of the stomach usually ulcerate so deeply that the excised specimen has the appearance of a simple ulcer but, at roentgenoscopic examination, the slightly tumefied border of the ulcerated area can be seen and together with secondary manifestations furnishes a basis for confident diagnosis. Rarely do small tumefactive cancers not ulcerate or, at least, do not do so deeply and are then indistinguishable from benign polypoid adenomas or mixed tumors. However, most of the principally benign gastrointestinal polyps contain cancer cells in some part of the tumor and all such growths should be rated as suspected. Early scirrhus cancer involving only a small portion of the gastric wall is infiltrative rather than obviously tumefactive but is recognizable by the "ground-glass" appearance of its surface as seen roentgenoscopically. Early scirrhus cancer at the pylorus tends to encircle the prepyloric segment of the stomach and produce a funnel-shaped deformity that is fairly characteristic.

Malignant ulcers, the ulcers in which tumefaction is not apparent either macroscopically or roentgenoscopically, can in most instances be distinguished from benign ulcers, although with varying degrees of positiveness. Any ulcer in which the diameter of the crater exceeds 2.5 cm. should be strongly suspected as being malignant for exceptions are rare. Smaller malignant ulcers have to be identified on the basis of other criteria such as irregularity of the margin or base of the crater, effacement of neighboring rugae, diminished peristaltic activity and absence of gastrospasm and of localized tenderness to pressure. In contrast, benign ulcers are usually characterized by smooth regularity of the contour of the crater, accentuation and convergence of neighboring rugae, active peristalsis, spastic manifestations and definite tenderness to pressure. But from 10 to 15 per cent of ulcers that bear no roentgenologic marks of malignancy prove, nevertheless, to be malignant when examined microscopically. It follows, therefore, that a roentgenologic diagnosis of "gastric ulcer," although it implies that the lesion probably is benign, should never be construed as being an assertion that malignancy definitely can be excluded. No gastric ulcer should be considered definitely as benign until it has disappeared rather promptly after rigid medical management, and even then frequent examinations at comparatively short intervals should be made to be certain that the ulcer has not recurred.

Small malignant lesions of any type in the immediate vicinity of the pylorus produce antral nar-

rowing, but this is also a characteristic of benign ulcer with accompanying spasm, hypertrophic rugae and hypertrophy of the pyloric muscle. The two latter conditions can almost invariably be identified, but distinction between benign gastric ulcer and cancer in the region can rarely be made with confident assurance, and a broad diagnosis of "lesion at the outlet" without further qualification will best serve the interests of all concerned.

Early cancers of the bowel have the same morphologic aspects and practically the same roentgenologic characteristics as those of the stomach. To exhibit those of the small bowel a somewhat tedious examination is required and it is extremely difficult to diagnose them specifically. Early malignant lesions of the large bowel are readily demonstrable by the double contrast method and many of them, such as encircling scirrhus cancers, deeply ulcerated lesions with elevated margins and polyps that are partly or potentially malignant, can be identified.

In general, it may be said that the roentgenologic method is capable of disclosing practically all malignant lesions of macroscopic size in the alimentary canal and that most of them can be identified. At the same time it must be pointed out that the method never can exclude positively the existence of malignancy in lesions that have every roentgenologic appearance of benignancy, and such lesions should always be regarded as suspected until their character is proved.

Mayo Clinic.

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#### PUBLIC BECOMING AWARE OF ADVANTAGES OF ETHICAL, PRESCRIBED REMEDIES

"Education is making the public aware of the advantage of using ethical remedies and prescribed remedies," *The Journal of the American Medical Association* for June 21 declares in commenting on the results of recent Federal legislation affecting prescriptions and "patent medicine" claims.

"When the new Federal Food, Drug and Cosmetic Act was enacted," *The Journal* says, "many doubted its effectiveness. Similar consideration was given to the Wheeler-Lea Amendment to the Federal Trade Commission Act, which became a law at about the same time. Now some figures have become available which seem to indicate clearly that such legislation is having a desirable effect. *The American Journal of Pharmacy* for January 1941 contains an item under the title 'The Nation Takes Its Medicine,' noting that prescription drugs and medicines showed an increase of \$36,000,000 for 1939 over 1937 and that 'patent' and proprietary medicines for public sale decreased \$18,000,000 in value in the same period. The actual value of the prescription medicines in 1939 was \$178,930,487. The value of 'over the counter' medicines in that year was \$166,577,263. Obviously, therefore, the permissible claims for 'patent medicines' today are so restricted as to reduce their sale to the public, or the public is becoming better informed as to the advantages of employing ethical remedies and prescribed remedies. *The Drug and Cosmetic Industry* for December 1940 provides an analysis in its story 'Ethicals Take Lead.' Apparently vitamins showed the greatest gain, glandular preparations also advanced, and the use of biologic preparations was adversely affected by the popularity of sulfanilamide in infectious conditions."

## BLIND PENSIONERS IN MISSOURI

JOHN F. HARDESTY, M.D.

ST. LOUIS

In 1920 a constitutional amendment providing pensions for the deserving blind was passed by popular vote in the State of Missouri. Since that time, sufficient numbers have been pensioned to make a study of their case records valuable for statistical purposes.

The provisions of the original law are so well known that I shall call attention to only a few which especially concern us.

Table 1. Cause, Number and Percentage of Blindness

Cause	No. of Eyes	Per Cent
1. Cataract	4,709	25.
2. Optic atrophy	2,411	12.8
3. Syphilis	39	.2
4. Optic neuritis and neuroretinitis	251	1.3
5. Glaucoma	2,729	14.3
6. Buphthalmus	58	.3
7. Microphthalmus	46	.24
8. Hypertension and vascular disease	16	.08
9. Exophthalmic goiter	2	.01
10. Trachoma	3,110	16.5
11. Corneal scars	727	3.8
12. Pterygium	4	.02
13. Xerosis	2	.01
14. Cancer and carcinoma	22	.11
15. Sarcoma and melanosarcoma	3	.015
16. Pemphigus	8	.04
17. Enucleation	12	.06
18. Phthisis bulbi	206	1.
19. Panophthalmitis	28	.14
20. Ophthalmia neonatorum	297	1.5
21. Gonorrhea	9	.04
22. Purulent ophthalmia	4	.02
23. Keratitis	18	.09
24. Keratitis interstitial	61	.3
25. Keratomalacia	2	.01
26. Keratoconus	5	.02
27. Uveitis	901	4.7
28. Retinitis	37	.19
29. Retinal detachment	107	.5
30. Retinal degeneration	114	.6
31. Retinal hemorrhage	66	.35
32. Retinitis pigmentosa	241	1.2
33. Chorio retinitis	699	3.7
34. Intra-ocular hemorrhage	6	.03
35. Thrombosis of central retinal vein	4	.02
36. Occlusion of central artery	9	.04
37. Hemorrhage of brain	2	.01
38. Congenital defects	21	.1
39. Congenital anophthalmus	11	.05
40. Exophthalmitis	4	.02
41. Albino	2	.01
42. Myopia	74	.39
43. Diabetes	68	.36
44. Nephritis	15	.07
45. Eclampsia	4	.02
46. Focal infection	6	.03
47. Amblyopia exanopsia	6	.03
48. Toxic amblyopia	6	.03
49. Erysipelas	2	.01
50. Trauma (industrial)	454	2.4
51. Sympathetic ophthalmia following trauma (industrial)	45	.23
52. Trauma (nonindustrial)	698	3.7
53. Sympathetic ophthalmia following trauma (nonindustrial)	119	.63
54. Infantile paralysis	2	.01
55. Meningitis, cerebrospinal	60	.32
56. Neoplasm	2	.01
57. Intracranial (tumor)	64	.3
58. Miscellaneous	4	.02
59. No diagnosis	199	1.05
60. Causes undetermined	2	.01
61. Retrobulbi	1	.005
	18,834	99.050

Table 2. Habitat of 9,417 Persons (18,834 Eyes) Who Received Pensions Since 1923

Cause	Nomenclature Number	Rural	Urban	Total
Cataract	510	3,689	1,020	4,709
Optic atrophy	710	1,369	1,042	2,411
Syphilis	19.9	15	24	39
Optic neuritis and neuroretinitis	720 or 740	216	35	251
Glaucoma	110	1,797	932	2,729
Buphthalmus	143	23	35	58
Microphthalmus	144	15	31	46
Hypertension and vascular disease	74.0	8	8	16
Exophthalmic goiter	78.0		2	2
Trachoma	20.0	2,999	111	3,110
Corneal scars	380	551	176	727
Pterygium	380	4		4
Xerosis	158		2	2
Cancer and carcinoma	69.0	19	3	22
Sarcoma and melanosarcoma	69.0	3		3
Pemphigus	360	6	2	8
Enucleation	190	3	9	12
Phthisis bulbi	151	156	50	206
Panophthalmitis	130	26	2	28
Ophthalmia neonatorum	15.9	155	142	297
Gonorrhea	12.0	7	2	9
Purulent ophthalmia	29.0	4		4
Keratitis	340	3	15	18
Keratitis, interstitial	310	47	14	61
Keratomalacia	380	1	1	2
Keratoconus	380	2	3	5
Uveitis	420	556	345	901
Retinitis	620	22	15	37
Retinal detachment	640	58	49	107
Retinal degeneration	660	58	56	114
Retinal hemorrhage	650	47	19	66
Retinitis pigmentosa	660	157	84	241
Chorio retinitis	630	529	170	699
Intra-ocular hemorrhage	800	4	2	6
Thrombosis of central retinal vein	74.0		4	4
Occlusion of central artery	74.0	5	4	9
Hemorrhage of brain	74.0	2		2
Congenital defects	149	19	2	21
Congenital anophthalmus	142	8	3	11
Exophthalmitis	180	4		4
Albino	141		2	2
Myopia	121	52	22	74
Diabetes	72.0	33	35	68
Nephritis	73.0	13	2	15
Eclampsia	76.0		4	4
Focal infection	17.0		6	6
Amblyopia exanopsia	910	2	4	6
Toxic amblyopia	59.0	6		6
Erysipelas	28.0	2		2
Trauma (industrial)	40.0	325	129	454
Sympathetic ophthalmia following trauma (industrial)	440	32	13	45
Trauma (nonindustrial)	39.0	510	188	698
Sympathetic ophthalmia following trauma (nonindustrial)	440	87	32	119
Infantile paralysis	28.0		2	2
Meningitis, cerebrospinal	14.0	36	24	60
Neoplasm	69.0	2		2
Intracranial (tumor)	750	45	19	64
Miscellaneous	990	2	2	4
No diagnosis	92.0	165	34	199
Causes undetermined	92.0	2		2
Retrobulbi	750	1		1
		13,902	4,932	18,834

As first constituted, the act provided among other things that the adult blind person must have vision not better than 20/450 in either eye with best correction. It was found difficult to have all applicants for the blind pension examined by oculists; hence some were examined by general physicians. Some of these diagnoses were of questionable value and these cases were reported by H. D. Lamb,\* so they will not be included in this study.

In 1923 the fifty-second General Assembly changed the provision of the act to provide that the applicant must have vision not better than light perception only and the recognition of the motion (not the form) of the hand of the examiner at not

Presented at the 84th Annual Session of the Missouri State Medical Association, St. Louis, April 28, 29, 30, 1941.

\*Lamb, H. D.: Blindness Among 6,000 Adults, J. Missouri M. A. 23:179 (May) 1926.

Table 3. Number of Active and Passive Pensioners (18,834 Eyes)

Causes	Active Pensioners Number of Eyes, 6,908			Passive Pensioners Number of Eyes, 11,926		
	Rural	Urban	Total	Rural	Urban	Total
Cataract	816	283	1,099	2,873	737	3,610
Optic atrophy	445	463	908	924	579	1,503
Syphilis	13	24	37	2		2
Optic neuritis and neuroretinitis	76	17	93	140	18	158
Glaucoma	643	430	1,073	1,154	502	1,656
Buphthalmus	13	31	44	10	4	14
Microphthalmus	11	19	30	4	12	16
Hypertension and vascular disease	6	6	12	2	2	4
Exophthalmic goiter		2	2			
Trachoma	1,047	54	1,101	1,952	57	2,009
Corneal scars	204	83	287	347	93	440
Pterygium				4		4
Xerosis					2	2
Cancer and carcinoma	2		2	17	3	20
Sarcoma and melanosarcoma	3		3			
Pemphigus	4	2	6	2		2
Enucleation	1	7	8	2	2	4
Phthisis bulbi	77	25	102	79	25	104
Panophthalmitis	15		15	11	2	13
Ophthalmia neonatorum	103	106	209	52	36	88
Gonorrhea	7	2	9			
Purulent ophthalmia				4		4
Keratitis	3	9	12		6	6
Keratitis, interstitial	25	10	35	22	4	26
Keratomalacia		1	1	1		1
Keratoconus		1	1	2	2	4
Uveitis	230	151	381	326	194	520
Retinitis	3	4	7	19	11	30
Retinal detachment	37	30	67	21	19	40
Retinal degeneration	9	26	35	49	30	79
Retinal hemorrhage	12	5	17	35	14	49
Retinitis pigmentosa	108	59	167	49	25	74
Chorio retinitis	205	84	289	324	86	410
Intra-ocular hemorrhage				4	2	6
Thrombosis of central retinal vein					4	4
Occlusion of central artery	2	4	6	3		3
Hemorrhage of brain				2		2
Congenital defects	15	2	17	4		4
Congenital anophthalmus	6	3	9	2		2
Exophthalmitis	2		2	2		2
Albino					2	2
Myopia	26	16	42	26	6	32
Diabetes	8	17	25	25	18	43
Nephritis	7		7	6	2	8
Eclampsia		4	4			
Focal infection		6	6			
Amblyopia exanopsia	1	4	5	1		1
Toxic amblyopia	2		2	4		4
Erysipelas				2		2
Trauma (industrial)	145	57	202	180	72	252
Sympathetic ophthalmia following trauma (industrial)	10	4	14	22	9	31
Trauma (nonindustrial)	216	102	318	294	86	380
Sympathetic ophthalmia following trauma (nonindustrial)	46	23	69	41	9	50
Infantile paralysis		2	2			
Meningitis, cerebrospinal	22	18	40	14	6	20
Neoplasm	2		2			
Intracranial (tumor)	22	10	32	23	9	32
Miscellaneous		2	2	2		2
No diagnosis	42	6	48	123	28	151
Causes undetermined	2		2			
Retrobulbi				1		1
	4,694	2,214	6,908	9,208	2,718	11,926

more than one foot in either eye. This change also provided that all examinations were to be made by a competent oculist approved by the Missouri Commission for the Blind which was empowered to administer the law. Every blind pensioner on the roll at that time was reexamined by an oculist and since that time all new applicants have been subjected to the same type of examination. It is with those certified for the blind pension after these new provisions were put into effect that I shall deal in this study.

Since the St. Louis Society for the Blind has for one of its chief aims the prevention of blindness, with the help of funds granted by its Board of Directors, a survey of the record of all persons granted the blind pension in Missouri from 1923

to date was made in the hope that facts might be brought to light which would help in prevention work. The Missouri Commission for the Blind permitted a study of their records, hence, the following figures are as accurate as possible. During this period 9,417 persons have been granted the blind pension.

In some instances, more than one application was filed by the same person and the diagnosis of the cause of blindness differed in the different applications; hence, judgment was required as to which diagnosis should be selected. For this reason and others which are apparent to anyone who has tried to classify such a list, some mistakes undoubtedly have occurred, but the greatest effort has been exerted in the hope that some value may accrue.

Table 4. *Active and Passive Pensioners in St. Louis and St. Louis County (2,952 Eyes)*

Causes	Active Pensioners (No. of eyes 1,308)			Passive Pensioners (No. of eyes 1,644)		
	White 966	Colored 342	Total	White 1,392	Colored 252	Total
	Male	Female		Male	Female	
Cataract	48	67	115	129	216	345
Optic atrophy	103	60	163	211	67	278
Syphilis	4		4			4
Optic neuritis and neuroretinitis		1	1	1	1	2
Glaucoma	68	128	196	122	149	271
Buphthalmus	11	6	17		2	2
Microphthalmus	3	6	9	6	4	10
Hypertension and vascular disease	4		4		2	2
Exophthalmic goiter		2	2			2
Trachoma	8	20	28	21	36	57
Corneal scars	19	22	41	23	27	50
Pterygium						
Xerosis						
Cancer and carcinoma					2	2
Sarcoma and melanosarcoma						
Pemphigus			2			2
Enucleation	5	2	7	2		2
Phthisis bulbi	2	1	3	4	5	9
Panophthalmitis					1	1
Ophthalmia neonatorum	22	36	58	10	6	16
Gonorrhea			2			2
Purulent ophthalmia						
Keratitis	5	2	7	4	2	6
Keratitis, interstitial	2		2		2	2
Keratomalacia		1	1			1
Keratoconus					2	2
Uveitis	45	47	92	52	63	115
Retinitis				2	3	5
Retinal detachment	16	6	22	8	7	15
Retinal degeneration	2	8	10	14	5	19
Retinal hemorrhage	1		1	3	2	5
Retinitis pigmentosa	16	16	32	8	13	21
Chorio retinitis	12	13	25	14	23	37
Intra-ocular hemorrhage					2	2
Thrombosis of central retinal vein				4		4
Occlusion of central artery						
Hemorrhage of brain						
Congenital defects		2	2			2
Congenital anophthalmus	3		3			3
Exophthalmitis						
Albino				2		2
Myopia	5	4	9	6		6
Diabetes	6	5	11	4	6	10
Nephritis					2	2
Eclampsia						
Focal infection	3	3	6			6
Amblyopia exanopsia	1		1			1
Toxic amblyopia						
Erysipelas						
Trauma (industrial)	19	4	23	16	2	18
Sympathetic ophthalmia following trauma (industrial)	1		1	1		1
Trauma (nonindustrial)	32	8	40	36	10	46
Sympathetic ophthalmia following trauma (nonindustrial)	8	2	10	5	2	7
Infantile paralysis						
Meningitis (cerebrospinal)	2	10	12	6		6
Neoplasm						
Intracranial (tumor)	4	2	6	3	4	7
Miscellaneous						
No diagnosis				1	6	7
Causes undetermined						
Retrobulbi						
	486	480	966	718	674	1,392
			1,308			1,644

The cause of blindness often differed in the two eyes of an individual; therefore, the figures are given in terms of eyes rather than persons. Since the figures relate only to those receiving the blind pension, it is obvious that they do not throw any light on the actual number of blind persons in the state who might qualify for the pension as to amount of vision but who are ineligible because of income or other reasons, nor does it take into consideration those industrially blind who have too much vision to come under the blind pension law.

Pensioners from cities of over 30,000 were classed as urban while all others were classed as rural dwellers. In order to arrive at the percentage of the state's population considered as urban or rural,

the 1930 census was used as it was about the middle of the period under consideration, i. e., 1923-1940. When that census was taken, Missouri had a population of 3,629,367, of which approximately 37 per cent are considered urban in this survey and 63 per cent rural. Probably many classified as urban dwellers migrated to the cities for eye care and their blindness originated elsewhere, but there appears to be no way of determining this.

It is obvious that many of the eyes considered in this report were also included in the statistics of Dr. Lamb in 1926, but it is probable that some of the diagnoses were changed when all patients were reexamined by oculists.

Table 1 shows the number of blind eyes due to each cause, with percentages. This classification is



Table 5. Age of Onset, Color and Sex of All Pensioners (Continued)

No. of Eyes	Cause	Up to 20		20 to 30		30 to 40		40 to 50		50 to 60		60 to 70		70 over		Total																	
		White	Negro	White	Negro	White	Negro	White	Negro	White	Negro	White	Negro	White	Negro	White	Negro																
4	Thrombosis of central retinal vein																																
9	Occlusion of central artery																																
2	Hemorrhage of brain																																
21	Congenital defects	8	13																														
11	Congenital anophthalmus	7	4																														
4	Exophthalmitis																																
2	Albino																																
74	Myopia	26	9	2	4																												
68	Diabetes					6	3																										
15	Nephritis					7	4																										
4	Eclampsia					2	8																										
6	Focal infection																																
6	Amblyopia exanopsia																																
6	Toxic amblyopia	3																															
2	Erysipelas																																
454	Trauma (industrial)	3																															
45	Sympathetic ophthalmia following trauma (industrial)	1																															
698	Trauma (non-industrial)	205	72	13	10	62	8	12	2	46	16	11	5	53	13	8	3	52	12	5	1	37	13	1	2	23	8	3	2	478	142	53	25
119	Sympathetic ophthalmia following trauma (non-infantile Paralysis Cerebrospinal Neoplasm Intracranial (tumor) Miscellaneous No diagnosis Causes undetermined Retrobulbi	51	21	1	1	7	4	2	1	1	4	2	5	1	3	2	1	1	4	3	3	1	74	36	4	5							
2	Infantile Paralysis	2																															
60	Meningitis																																
27	Cerebrospinal	2	15	4	2	4	4	2	2																								
2	Neoplasm																																
64	Intracranial (tumor)	6	6	2	9	4	4	4	4																								
4	Miscellaneous																																
199	No diagnosis	36	21	1	3	2	2	2	2	11	16	2	4	10	15																		
2	Causes undetermined																																
1	Retrobulbi																																
18,834		2,009	1,826	128	126	720	413	80	43	884	530	117	86	1,052	780	200	110	1,224	1,011	194	150	1,419	1,468	170	181	1,562	1,958	175	218	8,870	7,986	1,064	914

too long but could be shortened only at the expense of accuracy.

A comparison of these percentages with those of Dr. Lamb, the last figures available for the state, shows there has been a reduction of practically 4 per cent in the number of eyes blinded by trachoma. This could well be due to the intensive preventive work carried on by the state and federal governments.

The number of blind eyes due to cataract has increased by 7 per cent and glaucoma as the cause of blindness has risen practically 5 per cent. So far, science knows no way of reducing blindness due to cataracts but the large number due to glaucoma are mostly preventable, and it is hoped that these figures may lead eventually to earlier recognition and hence to the saving of many such eyes.

The total percentage of blindness from all trauma has increased 1 per cent. No previous figures are available for the part played by industry in this increase, yet this should be a stimulus to the safety departments of industrial plants. It is my belief that state-wide abolition of fireworks would do much to reduce blindness from trauma.

The small percentage due to ophthalmia neonatorum is most gratifying and it is believed that with the new specific drugs this number will be reduced to practically nil.

Myopia as a cause of blindness shows a reduction from 1.2 per cent to 0.39 per cent. This may be due to our sight conservation classes.

Table 2 shows the habitat of pensioners. Since approximately two thirds of the state's population is classified as rural and one third as urban, it will be seen that trachoma is much more prevalent in the rural districts, and cataract as a cause of blindness is also higher among rural dwellers. The numeral immediately following the diagnosis represents an attempt to make the diagnosis fit the nomenclature recommended by the Committee on Statistics of the Blind.

While glaucoma shows about the same incidence in city and country, optic atrophy, ophthalmia neonatorum and syphilis are predominantly diseases of urban districts.

Industrial trauma is somewhat predominant in rural communities, while nonindustrial trauma is markedly predominant in the country. Lack of early care may account for this.

Table 3, showing active and passive pensioners, refers to those now receiving the blind pension and those who have received the blind pension but are no longer on the active roll because of death or removal for other reasons.

Table 4 is limited to St. Louis and St. Louis County because the work of the St. Louis Society for the Blind is confined to that district.

Table 5 gives a general résumé of the age at onset, color and sex.

I take this opportunity to thank the Missouri Commission for the Blind for their hearty cooperation in making this survey, and without the help

of the executive secretary of the St. Louis Society for the Blind and her able staff the task of going through such extensive material would not have been possible.

634 North Grand Avenue.

## **SIMPLE TESTS FOR THE RAPID DIFFERENTIATION OF THE BARBITURATES AND OTHER SEDATIVE DRUGS**

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The tests to be described are useful in the qualitative differentiation of the barbiturates and certain other sedative drugs. These procedures are simple and easy to perform, the only apparatus required is test tubes and medicine droppers and the few reagents are prepared readily. Often in cases of poisoning the quick recognition of the group of drugs is necessary before proper treatment can be instituted. In this respect differentiation of the opiates and barbiturates is especially valuable. The present accepted procedures are so complicated or require so many reagents that, if tests are to be made for more than one drug, most physicians prefer to rely on laboratories for the analysis; but, since the time required is likely to be too long, in acute poisoning such facilities offer little aid in treatment. The quick tests here presented are also useful for checking the purity of drugs and for identification.

### **TEST REAGENTS**

1. Mercurous nitrate, 15 per cent solution in 5 per cent nitric acid. A few drops of mercury must be kept in the bottom of the bottle.
2. Potassium iodide, 1 normal (16.5 per cent) aqueous solution.
3. Mercuric nitrate, 15 per cent solution in 5 per cent nitric acid.
4. Ferric chloride, 1 normal (9 per cent) aqueous solution.

All of the test reagents must be kept in amber colored bottles and be discarded when they become hazy or turbid. Hard tap water (as Columbia, Missouri, deep well water) may be used as a solvent for test materials with mercuric nitrate but is quite incompatible with mercurous nitrate as are also hot water and alkalis.

### **MERCUROUS NITRATE TEST**

The addition of from 5 to 25 mg. of a soluble barbiturate to 10 cc. of water in a clean test tube containing 0.04 cc. or one drop of the mercurous nitrate test solution produces a whitish to gray gelatinous or flocculent precipitate (Motley\*). Sodium bar-

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\*Motley, Hurley L.: A Simple and Rapid Qualitative Test for Barbiturates. Scientific Proceedings of the American Society for Pharmacology and Experimental Therapeutics. April 15, 1941. J. Pharmacol. & Exper. Therap. 72:30.

bital and pentothal sodium form a finer precipitate with less tendency for flocculation. The barbiturate-mercurous nitrate precipitate is insoluble in acetic acid but soluble in nitric and sulfuric acids. The flocculent character of the precipitate is more marked when the pH is below 7.0, although the reaction occurs within a pH range from 4.5 to 9.5 as determined on a Beckman pH meter. The addition of a small amount of acetic acid does not interfere with the test and causes the precipitate to be more gelatinous. A large excess of barbiturate tends to dissolve some of the precipitate and make it less gelatinous. Alcohol up to 20 per cent may be used to dissolve drugs that are only sparingly soluble in cold water.

The addition of 0.08 cc. or two drops of potassium iodide test solution to the barbiturate-mercurous nitrate precipitate produces a greenish color by reflected light and the character of the precipitate changes from gelatinous to one with no visible particles. On standing, the precipitate slowly settles, some sticking to the sides of the tube, and the greenish color by reflected light becomes yellow-green somewhat like a blank. The reagents lose the green color most rapidly with phenobarbital of any of the barbiturate group although, usually, a greenish tinge is perceptible after one or two hours. In the case of barbital sodium, the fine precipitate that settles out has a definite green color, being only slightly faded. With 10 mg. or more of pentothal sodium, a thiobarbiturate, a slaty gray precipitate forms with mercurous nitrate and on the addition of potassium iodide the color does not change to the characteristic green by reflected light. The addition of potassium iodide to a blank produces a canary yellow color by reflected light and a fine

colloid-like precipitate. Spectrophotometer determinations on light transmission from 400 to 700 angstroms revealed specific differences between the control and a sample with barbiturate.

As can be seen from tables 1 and 3 this test is useful in the quick differentiation of the barbiturates from other sedative drugs, particularly the opiates. Dilantin sodium, theobromine and theophylline compounds give similar tests and cannot be eliminated by these reactions. Caffeine compounds, sodium benzoate and sodium salicylate produce the typical gelatinous precipitate with mercurous nitrate but on the addition of potassium iodide a coarse yellow precipitate results. Table 3 shows that the addition of mercurous nitrate alone identifies aminopyrine from antipyrine and these two in turn from acetanilide and acetophenetidin which give no reaction with the reagent. Avertin, carbromal, chloral hydrate, sulfates, sulfonmethane and sulfonethylmethane do not produce a precipitate with mercurous nitrate. Morphine and codeine with both reagents produce a greenish coarse precipitate, which settles quickly, and makes an easy distinction from the barbiturates. Apomorphine gives a white precipitate with mercurous nitrate which develops a pinkish tinge on standing a few minutes.

#### MERCURIC NITRATE

The addition of from 5 to 25 mg. of a soluble barbiturate to 10 cc. of water in a test tube containing one drop of mercuric nitrate test solution produces a white gelatinous precipitate, similar in character to the one produced by mercurous nitrate but whiter and more flocculent (table 2).

The addition of two or more drops of potassium iodide test solution dissolves the barbiturate-mercuric nitrate precipitate, of those tested, except in the case of oral sodium and seconal the precipitate only partly disappears so that the test mix-

Table 1. *Mercurous Nitrate*

Precipitate Gelatinous to Flocculent			
Barbiturates Dilantin sodium Theobromine compounds Theophylline compounds	} + KI = Exceedingly Fine Greenish Precipitate		
Caffeine compounds Sodium benzoate Sodium salicylate		} + KI = Yellow Coarse Precipitate	
Precipitate Non Gelatinous			
Apomorphine (pinkish tinge) Bromides Chlorides Hydrochlorides Phosphates			} + KI = Yellow to Dark Green Coarse Precipitate
Precipitate Very Small Amount or Opalescent			
Theophylline alkaloid Aminophylline Malonic Acid Antipyrine			
No Precipitate			
Acetanilide Acetophenetidin Acetylsalicylic acid Aminopyrine Carbromal Chloral hydrate Sulfonmethane Sulfonethylmethane Caffeine alkaloid Theobromine alkaloid Sulfates Urea			

Table 2. *Mercuric Nitrate*

Precipitate Gelatinous to Flocculent	
Barbiturates	FeCl <sub>3</sub> = Clear Amber
Dilantin sodium	FeCl <sub>3</sub> = Ppt. Present
Caffeine sodiobenzoate	FeCl <sub>3</sub> = Brown Yellow Ppt.
Theobromine and theophylline	
salicylate compounds	FeCl <sub>3</sub> = Dark Purple
Sodium benzoate	FeCl <sub>3</sub> = Ppt. Present
Precipitate Fine Small Amount to Opalescent	
Other caffeine compounds	
Codeine phosphate	
Aminophylline	
No Precipitate	
Morphine sulfate (greenish tinge)	
Dilaudid hydrochloride (bluish color with FeCl <sub>3</sub> )	
Acetanilide	
Acetophenetidin	
Aminopyrine (dark purple fades with FeCl <sub>3</sub> )	
Antipyrine (wine red with FeCl <sub>3</sub> )	
Acetylsalicylic acid	
Bromides	
Carbromal	
Chloral hydrate	
Sulfonmethane	
Sulfonethylmethane	
Malonic acid	
Caffeine alkaloid	
Theobromine alkaloid	
Theophylline alkaloid	
Apomorphine (light red color clear)	

Table 3. *Differentiation of Barbiturates From Other Drugs*

Drug	HgNO <sub>3</sub>	KI	Hg (NO <sub>3</sub> ) <sub>2</sub>	FeCl <sub>3</sub>	KI
Barbital, phenobarbital, pentobarbital, amytal, alurate, evipal (sodium)	White-gray gel. ppt.	Green fine ppt.	White gel. ppt.	Clear	Clear
Ortal sodium	White gel. ppt.	Green fine ppt.	White gel. ppt.	Ppt. present	Hazy
Seconal	White gel. ppt.	Green fine ppt.	White gel. ppt.	Hazy	Hazy
Pentothal sodium	White-gray fine ppt.	Green gray fine ppt.	White gel. ppt.	White fine ppt.	Clear
Dilantin sodium	White gel. ppt.	Green fine ppt.	White gel. ppt.	Ppt. present	Ppt. present
Aminopyrine	Purple (fades)	Green coarse ppt.	Clear	Purple (fades)	Clear
Antipyrine	Gray fine ppt.	Slate gray ppt.	Clear	Wine red	Yellow coarse ppt.
Acetanilide					
Acetophenetidin	Clear	Yellow fine ppt.	Clear	Clear	Clear
Sulfonmethane					
Sulfonethylmethane	Clear	Gray fine ppt.	Clear	Clear	Clear
Potassium and sodium bromide	White fine ppt.	Yellow fine ppt.	Clear	Clear	Clear
Sodium salicylate	Light gray gel. ppt.	Yellow coarse ppt.	White gel. ppt.	Dark purple	Clear
Aspirin, avertin, chloral hydrate	Clear	Yellow fine ppt.	Clear	Clear	Clear
Carbromal	Clear	Dark brown ppt.	Clear	Clear	Clear
Scopolamine HBr.	White fine ppt.	Yellow coarse ppt.	Clear	Clear	White fine ppt.
Heroin	White fine ppt.	Brown coarse ppt.	Clear	Clear	Gray ppt.
Morphine sulfate	Clear	Green coarse ppt.	Clear-green	Clear-green	Clear-green
Apomorphine HCl.	White ppt.-pink	Gray fine ppt.	Clear-red	Red turbid	Yellow turbid
Codeine phosphate	White fine ppt.	Green coarse ppt.	White fine ppt.	Clear	Yellow ppt.
Codeine sulfate	Clear	Green coarse ppt.	Clear	Clear	Yellow ppt.
Dilaudid HCl.	White fine ppt.	Green fine ppt.	Clear	Clear-blue	White ppt.
Papaverine HCl.	White fine ppt.	Brown coarse ppt.	Clear	Clear	White ppt.
Strychnine, benzedrine					
Atropine (sulfate)	Clear	Green coarse ppt.	Clear	Clear	Clear
Cocaine HCl.	White fine ppt.	Green coarse ppt.	Clear	Clear	White coarse ppt.

ture becomes hazy. Potassium iodide does not dissolve the precipitate of dilantin sodium with mercuric nitrate but does dissolve that of pentothal sodium. The addition of two or more drops of ferric chloride solution also dissolves the mercuric nitrate-barbiturate precipitate except for ortal sodium and seconal which, as with potassium iodide, fail to clear completely. Ferric chloride does not dissolve the precipitate of pentothal sodium or dilantin sodium.

Table 3 shows that pentothal sodium and dilantin sodium may be distinguished from the barbiturates by using potassium iodide and ferric chloride in conjunction with mercuric nitrate. The various salicylate compounds of theobromine and theophylline give a gelatinous white precipitate with mercuric nitrate and a dark purple color appears on the addition of ferric chloride. The purple color will form with ferric chloride alone but is intensified by the mercuric nitrate. The salicylate part of the molecule is responsible for this chromogenic reaction.

Morphine sulfate with mercuric nitrate imparts a greenish tinge to the solution which remains clear and is not changed by ferric chloride or potassium

iodide. Codeine phosphate gives a fine white precipitate with mercuric nitrate while the sulfate remains clear; but both the phosphate and sulfate salts of codeine produce a yellow precipitate on the addition of potassium iodide while the use of ferric chloride in place of the potassium iodide results in a clear solution in both cases. Dilaudid hydrochloride does not produce a precipitate with mercuric nitrate but the addition of ferric chloride yields a clear bluish solution the color of which persists. With mercuric nitrate alone apomorphine gives a clear red solution which does not fade. The opiates, morphine, codeine, dilaudid and apomorphine can be differentiated from one another by these tests.

Ferric chloride with aminopyrine develops a deep purple color which fades in less than 60 seconds; however, if mercuric nitrate be added first the color persists for two or three minutes. Antipyrine gives a wine red color with ferric chloride while acetanilide and acetophenetidin do not. Acetylsalicylic acid, avertin, bromides, chloral hydrate, carbromal, sulfonmethane and sulfonethylmethane give no color reaction or precipitate with any of the three test reagents.

# SUMMARY

Simple tests are presented for the rapid differentiation of the barbiturates and other sedative drugs.

Since the above work has been reported, tests have been made with the reagents described on drugs other than the sedative group, and so far the sulfonamides have been the only ones found to give a somewhat similar though not an identical reaction with the barbiturates. This investigation is under way at the present time.

## INGUINAL HERNIA

### REPAIR WITH TRANSPLANTATION OF THE CORD THROUGH THE INTERNAL OBLIQUE MUSCLE

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#### PRELIMINARY REPORT

The importance of the cord in the repair of inguinal hernia has been recognized for many years. Recently Taylor<sup>1</sup> stated, "There is no record of a single recurrence after excision of the cord." Although this statement may be somewhat of an exaggeration, it is nevertheless substantially true and it crystallizes the fact that, other elements of repair being equal, removal of the cord greatly reduces the number of unsatisfactory results that follow existing technics in which the cord is carefully preserved. The necessity of providing room for exit of the cord has required the presence of an area between the internal oblique and Poupart's ligament which interferes with satisfactory closure of the hernial defect, produces liability of cord strangulation and affords a frequent pathway for recurrence.

Investigators have shown great ingenuity in meeting the numerous important problems that beset the adequate repair of the posterior inguinal wall and in the strengthening of the weakened or anatomically malformed anterior wall but, strangely enough, few advancements have been made which are calculated to eliminate the obvious defects made necessary to permit the unrestricted exit of the cord.

After observing for some little time the efficiency with which the abdominal muscles which had been separated in the direction of their fibers resisted intra-abdominal pressure, even after prolonged drainage or after a skillfully performed colostomy, it occurred to me that some principles involved might be applied in meeting the problem of the cord in hernial repair.

After several attempts I devised a method which is quite simple in technic and which has proven quite satisfactory in a series of forty-three cases observed for a period of from ten months to two years.

#### SURGICAL TECHNIC

After essential preliminaries such as destruction and high suture of the sac, meticulous cleansing

and suture of the transversalis fascia have been met, the arching fibers of the internal oblique muscle are cut transversely at a point approximately 4 centimeters medial to the internal ring for a distance of about 2 centimeters, care being taken not to injure the iliohypogastric nerve. It is advisable to place hemostats first on either side of the proposed incision into the muscle with just sufficient firmness to facilitate subsequent handling of the ends of the severed muscle. This transverse incision is extended laterally by blunt separation of the muscle in the direction of its fibers. The lateral separation is continued until the approximate level of the internal ring is reached (fig. 1). The muscular flap thus formed is displaced laterally and the sutured stump of the hernia sac is anchored beneath the transversalis and internal oblique muscles with a mattress stitch as shown in figure 2. This is facilitated by first displacing the cord downward. The cord is then placed beneath the muscle flap and allowed to protrude through the horizontal portion of the muscular incision at its medial end (fig. 2). One simple suture is placed on either side of the cord in the horizontal portion of the muscular wound. It is not necessary or desirable to place more stitches since there is no tendency whatsoever for the muscle fibers to separate; in fact, during contraction, they tend toward approximation. The vertical portion of the incision is closed easily without tension by two mattress sutures.

As a result of this procedure, the direction of the canal is caused to run upward and medially and the cord is supported below by the muscle flap and a thick muscular wall forms a firm buttress over the region of the internal ring. The transverse incision of the muscle heals quickly and firmly. Since the cord now emerges from between the fibers of the internal oblique muscle it leaves the lower end of the muscle unobstructed so that its subsequent suture to Poupart's ligament can be made as complete and as firm as desired without the danger of producing strangulation of the cord structures and without the necessity of leaving a defect in the hernial repair. If the cord is made to rest finally upon the surface of the external oblique fascia, an external ring can be fashioned at any desired point with the assurance that it will not be directly over the internal ring and that it will be separated from the posterior inguinal wall by firm muscle tissue (fig. 4).

#### COMMENT

The technic described offers a possible solution to the method by which the cord may be handled in the repair of inguinal hernias but it would be unfair to the procedure to assume that it can be substituted for the painstaking care with which other problems in the repair should be met. The apparent advantages of the procedure are:

1. It is a simple technic with a wide adaptability.
2. It permits complete closure of the inguinal

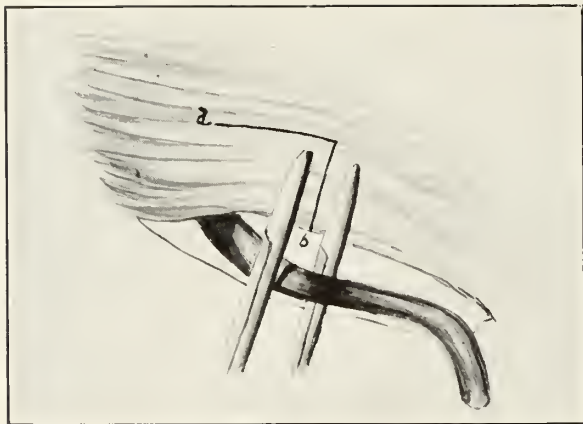


Fig. 1. Course of transverse incision, a-b, and longitudinal separation of internal oblique muscle.

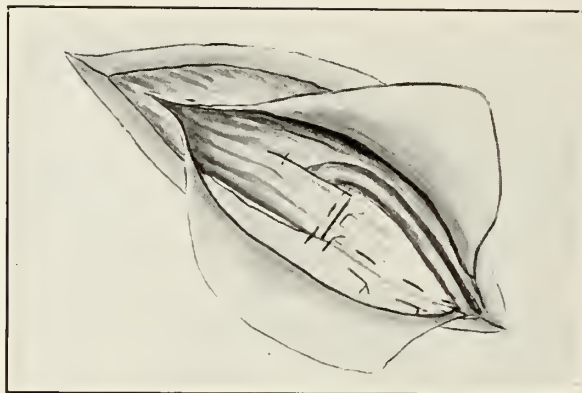


Fig. 3. Suture of muscle flap in internal oblique. Muscle loosely surrounds cord structures. Note that suture of internal oblique to Poupart's ligament includes only the fibromuscular part of the internal oblique.

defect with the assurance that strangulation of the cord will not occur.

3. It redirects the inguinal canal in an upward and medial direction and offers support to the cord and testicle which is normally furnished by the cremaster muscle.

4. The possibility of a continuous downward pull exerted by the weight of the testicle and cord upon the region of the internal ring is eliminated.

Normally the cremaster muscle serves a useful purpose in sustaining the weight of the testicle and cord and, in pulling the cord firmly against and thus helping to buttress, the transversalis fascia during periods of abdominal strain. After the formation of a descending hernial sac and almost certainly after herniorrhaphy, the efficiency of the cremaster muscle is, for all practical purposes, permanently destroyed. The described procedure offsets the unrestricted downward pull of the cord and testicle incident to other technics and thus eliminates the tendency for these forces to restretch the already weakened tissue surrounding the internal ring and thus favor recurrence.

Recently a technic in which the cord is transplanted into the femoral ring has been described by MacFee.<sup>2</sup> Although this technic also furnishes

room for exit of the cord without interfering with repair of the inguinal defect, it is more difficult than the method I have used and it has the further disadvantage not only of severing the inguinal ligament but also of opening the femoral ring.

The operation which I have described has been performed on forty-three patients. Thirty-seven of these have been followed for a period varying between two years and ten months. In none of them has a single recurrence been observed. Whatever optimism may be engendered by these findings, however, must be tempered by the facts that of the total forty-three patients six have not been seen since their discharge from the hospital and that in only twenty-two was the operation performed over eighteen months ago. The remaining fifteen cases were operated upon between fifteen and ten months previous to this report. Encouragement is obtained from the fact that in most cases recurrence from hernial repair occurs within the first six to nine months after operation.

Six of the cases in this series were recurrent hernias and it is of interest that in two of these recurrence had occurred at the point where the cord emerged from between the internal oblique muscle and Poupart's ligament.

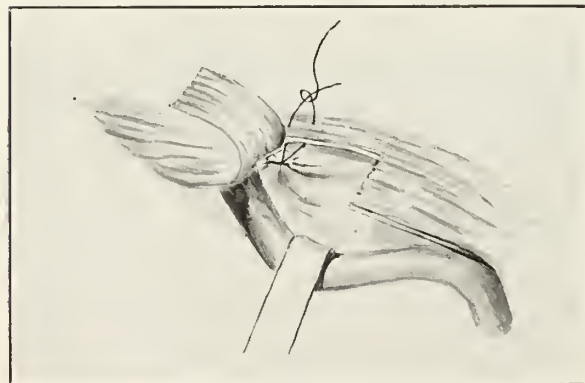


Fig. 2. Muscle flap pulled laterally with high fixation of sac stump. (Hemostats securing ends of severed muscles not shown.)

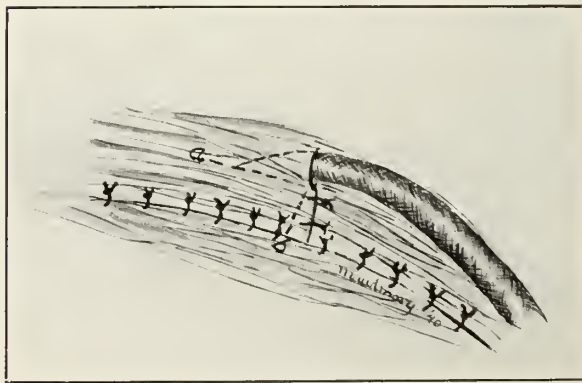


Fig. 4. Cord structures emerging from incision in fascia of external oblique. a-b is projected line of muscle flap in internal oblique.

Careful classification into direct and indirect hernia was not followed since, in my experience, the two are so frequently combined. It has been rare indeed that I have operated upon an indirect hernia that has not been associated with a borderline or a very definite protuberance in that portion of the posterior inguinal wall which is medial to the deep epigastric vessels. Practically all indirect inguinal hernias are treated as at least potentially direct and measures are taken to repair the weakness of the entire posterior wall whether the primary hernia is direct or indirect. In any case, the procedure described has no particular advantage in a simple uncomplicated direct hernia if such exists.

In conjunction with these procedures I have followed rather closely the anatomic and physiologic theories of Cherner,<sup>3</sup> Zimmerman,<sup>4</sup> Watson,<sup>5</sup> Rives<sup>6</sup> and others. Cherner<sup>3</sup> believes that the inguinal canal is a sphincter in which, during muscular strain, the internal oblique and transversalis muscles contract against Poupart's ligament, while at the same time the cremaster muscle pulls the cord upward and laterally so that the weak posterior inguinal wall is firmly buttressed. Zimmerman<sup>4</sup> and others call attention to the fact that in inguinal hernia the so-called inguinal triangle, formed by the arching fibers of the internal oblique and conjoined tendon, Poupart's ligament and the aponeurosis of the rectus abdominis, is widened either by stretching or by a congenital high insertion of the internal oblique muscle into the rectus sheath. This widening produces, as it were, an incontinence of the sphincter described by Cherner.

To offset this anatomic abnormality and to restore the continence of the inguinal sphincter I have, following the method of Fallis,<sup>7</sup> attempted to narrow the inguinal triangle by replacing the insertion of the internal oblique muscle to its normal position in the rectus sheath. I modify this procedure, after suturing the fibrous portion of the internal oblique muscle to Poupart's ligament, by leaving the purely muscular portion unattached so that its sphincteric action is unhampered.

#### CONCLUSIONS

The technic described has apparently, in a rather small number of cases, proved a satisfactory solution to the problems presented by the cord in the repair of inguinal hernia. While acquaintance with the procedure is too short to justify dogmatic conclusions, familiarity with its technic seems to justify its future investigation.

Professional Building.

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## A MENU FOR THE DIETARY MANAGEMENT OF ALLERGIC DISEASE

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ST. LOUIS

Allergic individuals become sensitized to those foods which have appeared in their diets with the most frequency throughout life. These, unfortunately, are the basic or conventional foods in most instances and the restriction of these foods leaves the individual appalled by the prospect of starvation. In fact, many allergic persons have been starved needlessly by eliminating foods too drastically either on advice or by self experimentation. Evidence of rather prompt improvement is not an unreasonable expectation on the part of most cooperative patients, and some method which provides this assurance in a high percentage of cases without the slow process of a trial and error diet and its attendant starvation is certainly to be welcomed. Such a method has been used in all types of allergic disease for the last two years with such success that it seems to warrant reporting. The diet itself with a few minor substitutions and adjustments suited to each individual case can be used to eliminate the symptoms of food sensitizations in practically all but the most severe cases. Instead of telling a patient what to eliminate, this diet informs him of what foods to eat and when to eat them. This is of particular advantage during the test period while the individual sensitizations are being worked out, and many times one or more of the basic foods arbitrarily proscribed by the menu can be reintroduced.

Wheat, milk, egg, white potato, pork, tomato, citrous fruit, chocolate and pineapple have been found to be the most common food offenders in most patients. These foods, therefore, have been taken out of the diet, substitutions for them have been made, and a menu for five successive days has been worked out. On the sixth day, the patient starts over with the first day but with a different group of the foods suggested for that day. In this way, a fairly complete alternation of diet is accomplished and it has many advantages. The suggested menu is given on page 234.

The following instructions are added to each menu given to a patient presenting himself for allergic management:

1. A menu for five successive days has been suggested. On the sixth day, please begin again with menu for day 1.
2. Please do not use any condiments other than sugar and salt. Please do not use any foods which do not appear on this menu.



be taken on each day nor at each meal. A large number of foods has been suggested so that a choice may be made and a more completely alternated diet is made possible. Try to keep the spacing of the foods according to the menu but alternations and substitutions may be made when necessary.

5. Maple syrup, olive oil and butter may be used.

The menu is obviously a therapeutic experiment but it is simple to use and gives a patient an idea of the many foods which are available after the conventional foods have been eliminated. The menu also saves much time during the test period, particularly when employed in conjunction with a food diary, as incompatible foods often can be detected without the necessity for testing. Marked improvement frequently is noted both by the patient and physician during the first few days of observation, but there also may be days when there is a marked exacerbation of symptoms. This is an explosive type of food reaction which can be detected readily as the food ingested on that day is known not only by the day indicated on the menu but also by means of a food diary devised especially for this purpose. Any such food which precipitates immediate symptoms should be eliminated entirely and replaced by a substitute. The diary form is shown on page 234.

When the most toxic foods have been identified by experimental tests, a corrected menu can be worked out for each individual. Even patients with the most severe allergy and with many food sensitizations at times can tolerate known incompatible foods provided they do not cause explosive symptom reactions and provided they do not occur in the diet with too much frequency.

By means of this alternated menu, inclusion of these foods is possible and tends to add not only variety but valuable foods to the diet which enables the allergic patient to be nourished instead of being starved and constitutes a most constructive step toward a more immediate relief.

This menu has been used successfully in the management of allergic headache, urticaria, acne, eczema, perennial vasomotor rhinitis, various types of gastrointestinal allergy, pollinosis and asthma. The presence of incompatible foods in the diet of a hay fever sufferer during the treatment period is responsible for the major portion of systemic reactions, but such reactions are rare if this menu is employed. By this method of alternated diet, an adequate vitamin intake is insured and a proper balance of fats, proteins and carbohydrates can be maintained easily even though many basic foods have been eliminated.

737 University Club Building.

#### A. M. A. SESSION HELD FIRST WEEK IN JUNE

Cleveland was the medical capital of the world the first week in June when the American Medical Association held its Ninety-Second Annual Session in the Ohio metropolis.

## LEIOMYOMA OF THE STOMACH

A CASE REPORT

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KANSAS CITY, MO.

The number of leiomyomas of the stomach that have been operated upon is exceedingly small. Conway (quoted by Mott<sup>5</sup>) reported twenty-five cases in which surgical treatment had been instituted. Of 200 benign tumors of the stomach found at autopsy, Rienets (quoted by Judd and Hoerner<sup>3</sup>) found 17 per cent to be leiomyomas. Eusterman and Senby (quoted by Hartman) in 1922 reported twenty-seven benign tumors in 2,168 operative and 2,285 nonoperative cases of gastric tumor.

The most common symptoms of this type of lesion are gastric hemorrhage, secondary anemia, tarry stools and obstruction, the latter because of the common location near the pylorus. Vomiting is recorded in 34 per cent of the cases. Occult blood in the stool is a common laboratory finding.

Alexander B. Moore (quoted by Mott<sup>5</sup>) emphasizes certain roentgen findings which, while not conclusive, are suggestive of the benign nature of the lesion. These are: (1) The filling defect is sharp, circumscribed, smooth edged and punched out. (2) The rugae around the tumor are more nearly normal. (3) Peristalsis is disturbed only slightly or not at all.

Lindquist and Mock<sup>4</sup> state that benign tumors may undergo malignant degeneration. The majority are submucous and project into the lumen. They are prone to ulceration. Generally no mass can be palpated.

The following case report is of interest because of the rarity of this clinical entity and because of the successful treatment of the case.

#### REPORT OF CASE

The patient, Mrs. A. M., aged 58, a housewife, entered the hospital on January 27, 1940, and was operated on on January 31 and was discharged on February 21.

Her history showed loss of weight and strength for three months, tarry stools for from one to two months, pain in epigastrium and left upper quadrant for from two to three weeks and vomiting of coffee ground material for from one to two months.

The patient stated she had felt well until two or three months prior to admission to the hospital. She had noticed loss of weight and at times was dizzy and was unable to do the work she previously had been capable of doing. Her appetite had always been good. She began having pain in the epigastrium two to three months previous to admission. Sometimes this pain would be present following eating, at other times when the stomach was empty. The pain was not relieved by food intake. For the preceding two months she had been nauseated and vomited, especially after eating heavy foods. There was a continuous feeling of heaviness and distress in the epigastrium. This was often followed by vomiting of coffee-ground type material. She had had tarry stools for the previous two months.

She stated she had had the usual childhood diseases. Generally, her health had been good. She had been caring for a crippled husband for the last twenty-five years. She had no shortness of breath or pain on exer-



Fig. 1. Roentgenogram of stomach showing tumor of the pyloric portion of the stomach.

tion. There was no bladder or kidney trouble. She had had no previous gastrointestinal trouble. Appetite was good and diet was adequate.

**Family History.**—Her father and mother had died of old age. A sister and brother are living. No other member of the family had had a similar condition and there was no history of cancer. One brother died of diabetes.

**Physical Examination.**—Patient was a white female who presented the appearance of being chronically ill. The skin showed a moderate degree of pallor. The pupils were equal and regular and reacted to light and accommodation. Hearing was good with no evidence of disease in ear canals or drums. There was no deviation of the septum of the nose and no polyps. Mouth was edentulous and tongue smooth. There was diffuse enlargement of the isthmus of the thyroid. Respiration excursion was equal and regular. Breath sounds were vesicular and there were no rales. Heart rate and rhythm were normal with no murmurs, pulse was 80, apex beat palpable  $2\frac{3}{4}$  inches from the midsternal line, blood pressure was 114/84. Abdomen showed no scars but tenderness of the epigastrium and some suggestion of a mass, no evidence of abdominal fluid and no hernia. Rectum showed no masses or hemorrhoids. Uterus was normal in size, anterior and in good position. Adnexa were not palpable. Could not feel good pulses in lower extremities.

Tentative diagnosis was carcinoma of the stomach, peptic ulcer, secondary anemia and simple goiter.

Examination of blood on January 28 showed hemoglobin 61 per cent, color index 0.8, erythrocytes 3,600,-



Fig. 3. Tumor and resected portion of the stomach.

000, leukocytes 11,600 with stabs 11 and segmented 64, neutrophils 75 per cent, lymphocytes 22 per cent, monocytes 2 per cent, blood type group 4. On February 12, analysis showed hemoglobin 71 per cent, color index 0.8, erythrocytes 4,170,000, leukocytes 11,950 with stabs 5 and segmented 62, neutrophils 67 per cent, lymphocytes 29 per cent, monocytes 2 per cent, eosinophils 2 per cent.

On January 29 blood chemistry showed 56 mg. sugar and 35 mg. nonprotein nitrogen; on February 2 analysis showed 396 mg. chlorides and on February 8, 429 mg. chlorides.

Urinalysis on January 27 showed color cloudy yellow, reaction 5.5, epithelium 1 plus; on January 29, color was clear yellow, reaction 6.0, epithelium 2 plus and pus cells 1 plus; on February 2 color was cloudy straw, reaction 5.5, specific gravity 1.013, trace of albumin, sugar 1 plus, epithelium 1 plus, pus cells 4 plus; on February 15, color was yellow and turbid, reaction 6.0, specific gravity 1.007, trace of albumin, epithelium 1 plus, pus cells 3 plus and red blood cells 1 plus.

Urine cultures on February 4 revealed Gram negative bacilli resembling colon bacilli.

Roentgen ray report\* on January 23 of the upper gastrointestinal tract showed the esophagus normal, the stomach rather large with a large filling defect about the size of a small orange involving the pars media on the lesser curvature side. The pyloric antrum was clear. The duodenal bulb was regular in outline. Barium flowed readily out of the stomach and through the duodenum.

A preoperative diagnosis of gastric carcinoma of the

\*Report made by Ivan J. Ellis, M.D.

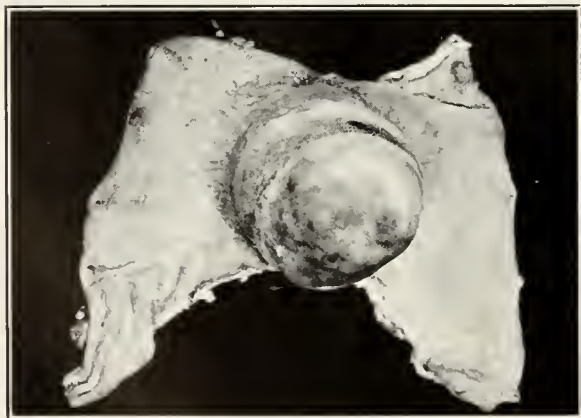


Fig. 2. Tumor and resected portion of the stomach.

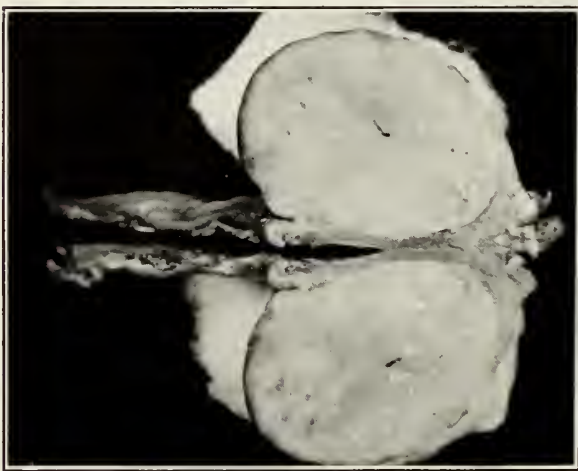


Fig. 4. Tumor sectioned in midline.

pars media was made. Postoperative diagnosis was leiomyoma of stomach.

Operation was performed on January 31. Upon opening the abdomen no evidence of metastasis was found in the peritoneum, liver or glands of the gastrohepatic or greater omentum. Stomach was movable. A rounded mass, the size of a small orange, fully movable and perfectly circumscribed, was on the posterior wall near the lesser curvature.

**Procedure.**—A left upper rectus incision was made and muscles retracted laterally. The peritrium was opened. There was a mass in the midportion of the stomach at the lesser curvature. The gastrohepatic omentum was opened and clamped and ligated down to the pylorus. The gastrocolic omentum was opened from the midportion to the pylorus. The stomach was resected from above the tumor mass to below the pylorus with Payr clamps. Clute clamp was placed on the duodenal end. The stump was inverted. A loop of the jejunum about 18 inches long was brought anterior to the colon and anastomosed to the stump of the stomach. Two layers of intestinal sutures were used. Angles were reinforced with interrupted sutures and closure was in layers. Wangenstein suction was used postoperatively.

#### PATHOLOGICAL REPORT ON SECTION OF STOMACH\*

**Gross Examination.**—Specimen was a pyloric portion of the stomach, including a small piece of the pars media. When the wall was cut slightly to one side of the greater curvature and the lumen exposed, a tumor was revealed. The specimen had an appearance of a butterfly, the tumor representing the body of the butterfly. The specimen measured 12.3 cm. along the greater curvature and 13.5 cm. along the greatest circumference. On the posterior wall between the lesser and greater curvatures, there was a round, protruding mass measuring 6.7 cm. in diameter. The lower border was 11 mm. from the pyloric sphincter. At about the midpart of the tumor there was a sharp border surrounding it, from 1.5 cm. to 3 cm. above the surface. The border represented the edge of a large ulcer on the surface of this rounded tumor mass. The lower half of the surface was covered with intact, thick stomach mucosa. The rest of the surface, although smooth, appeared to be denuded. This partly denuded area of the tumor was hyperemic and showed a few petechial hemorrhages. On sectioning the tumor, it was found to be soft, of rubbery consistency and grayish-white with a slight yellow tint. It was somewhat egg-shaped, circumscribed and appeared to arise from the muscle wall. At one edge there appeared to be a splitting of the muscularis, the part bordering the inferior surface and the other part bordering the lower exposed surface. The tumor measured 5.8 cm. in length and 4.2 cm. in its greatest diameter. The intact mucosa was thick and granular.

**Microscopic Examination.**—Sections showed a moderately cellular, highly vascular neoplasm which was markedly edematous and in many places infiltrated with lymphocytes, plasma cells, polynuclear eosinophils and occasional polynuclear neutrophils. The tumor was composed of interlacing fibers with rounded ovoid and spindle form nuclei. The tumor was so vascular in places that it gave the impression of an angiomyoma or an angiofibromyoma, but for the most part the fibers and nuclei were parallel to each other. The surface of the tumor was ulcerated and coated with fibrin. Other portions were lined with intact, edematous gastric mucosa which was infiltrated with many plasma cells, lymphocytes and eosinophils. The muscularis was present on both sides of the tumor. Van Gieson and Masson's trichrome stain quite conclusively proved that the tumor arose from muscle elements.

Diagnosis was leiomyoma of the stomach.

Fluoroscopic examination of the upper gastrointestinal tract on February 20 showed barium passed readily down the esophagus. The stomach showed evidence of a resection through the upper pars media. The gastric stump was of ample size. The stoma was functioning well. Barium passed readily through the efferent bowel without evidence of surgic or dilatation.

On February 7 the Wangenstein drain was removed. Condition was improved. She was given a soft diet with feeding every hour.

She was out of bed on February 15 and was discharged on February 20.

On April 5, the patient's wound was well healed and there was no tenderness. She complained of inability to eat large meals. There was no vomiting and she was gradually gaining strength and felt well.

By July 31 the patient was back to her normal duties. She was given injections of liver and iron intramuscularly and dilute HCl by mouth.

On October 1 the patient was hospitalized because of a minor cerebral accident.

2007 Bryant Building.

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#### HOW TO OVERCOME BREATHING BY MOUTH WHILE ASLEEP

About the only practical measure to help overcome breathing through the mouth during one's sleep is a sling or bandage that will hold the jaw closed during the night, *Hygeia, The Health Magazine* advises in a recent issue in answer to an inquiry.

"Some people find a solution by going to sleep in a different position—on the side instead of on the back," *Hygeia* says. "But, since most people change positions frequently during sleep, this does not always help. . . . Slings are often worn by chronic mouth breathers—after the removal of an obstruction in their nasal passageways—until they learn to breathe through their noses again. If such a bandage is used, it must be tight enough to keep the mouth closed but not so tight that it will interfere with the circulation of the blood to the skin and thus become unpleasant or painful. If an elastic bandage is used, it must be relatively loose. However, a physician should inspect the nasal passages. These passages may have an obstruction which will permit nasal breathing during waking hours, but during periods of relaxation the obstruction may be sufficient to cause a natural shift to mouth breathing."

"Many persons experience bowel cramps and gas in the abdomen when they eat or suck ice," *Hygeia, The Health Magazine* says in answer to an inquiry as to whether eating or sucking ice is injurious to the health. "Especially in hot weather, or after strenuous exercise, taking large amounts of any ice-cold liquid is not advisable. As long as no particular symptoms are observed the problem would seem to be one of personal taste. Some persons can tolerate moderate amounts of ice without harm."

\*Report made by H. B. Pessin, M.D.

## THE SELECTION OF HYPERTENSIVE PATIENTS FOR TREATMENT WITH THIOCYANATE

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Arterial hypertension is a clinical sign, not a disease. It is, therefore, not surprising that there are more than forty syndromes<sup>1</sup> known or suspected that have an associated increase in arterial pressure. However, these syndromes are quite rare and in clinical practice hypertension is nearly always of unknown origin. This great proportion of the cases is divided into the so-called essential and malignant phases.

The syndrome of essential hypertension is well known and needs no further elaboration. Malignant hypertension is characterized pathologically by arteriolonecrosis and clinically by retinal hemorrhage, exudate and papilledema and a rapid downward course toward cardiac, cerebral or renal death. A patient may have hypertension in the essential phase for many years before necrotizing arteriolitis develops, or he may be in a malignant phase from the onset of the hypertension.

But leaving the field of pathogenesis, one is faced with the problem of treatment. General hygienic care, both physical and psychologic, are of recognized value and small maintenance doses of sedatives generally have been helpful, although neither of these has ever been known to reverse nor even halt more than temporarily the progress of the disease.

However, since Pauli,<sup>2</sup> in 1903, first observed that the oral administration of thiocyanate decreased arterial pressure in hypertension, there has been a slow and uncertain accumulation of data. Thiocyanate was in disrepute soon after its introduction because it was found that some patients died in coma following what was then considered a therapeutic dosage. The disasters which resulted from the indiscriminate use of this drug cannot be questioned. Deaths during treatment with thiocyanate have occurred in patients who were seen by competent observers while taking dosages not considered excessive. These deaths, therefore, resulted either from idiosyncrasy or lethal concentrations of the drug in the blood stream.

Principally as a result of the work of Barker<sup>3</sup> of Chicago, these fatalities have been found to be due to individual variation in the ability to excrete thiocyanate. Because of this variation the blood concentration cannot be estimated with any reasonable safety by the oral dosage level which may vary anywhere between 2½ and 30 grains a day. The optimum blood concentration is now thought to be between 8 and 12 mg. per 100 cc. Some patients get their maximum relief at the lower level al-

though at the present time it seems safe to increase the concentration of thiocyanate to 15 mg. per 100 cc. before considering that any patient will not respond to this treatment.

### PROCEDURE

From a number of patients who have been given potassium thiocyanate for periods varying from six months to three years, five, whose responses seem typical, have been selected for this report. The present discussion, therefore, does not attempt a statistical analysis but rather aims to present the results observed in the treatment of hypertensive patients in private practice.

A diagnosis was made from data obtained by a complete history and physical examination supplemented by retrograde pyelograms, determinations of urea clearance and maximum concentrating power (Addis), urinalyses, electrocardiograms and bimonthly examinations of the ocular fundi.

All of these patients were under observation for at least sixty days before thiocyanate was given and since that time have been continuously observed for periods of from six months to three years.

The initial dose was 3 grains of potassium thiocyanate daily. The patients were seen once each week and blood thiocyanate determinations were made at each subsequent weekly visit. The dosage of thiocyanate was increased until one of three conditions prevailed: (1) the patient showed a distinct and sustained reduction of the mean level of blood pressure, or (2) there was no appreciable change in pressure but a definite amelioration of symptoms, or (3) the plasma concentration of thiocyanate reached about 15 mg. per 100 cc. with resultant lethargy and irritability in the absence of decreased arterial pressure.

### REPORT OF CASES

Case 1. E. A. P., a man, aged 46, was first seen in April of 1939 because of severe headaches and mental confusion of six months' duration. The urea clearance was 38 per cent of normal. Retinal hemorrhages were found in both eyes. The blood pressure averaged 235/140. Because of the steady and inevitable progress of his symptoms, it was decided to test his response to thiocyanate. A dose sufficient to bring his plasma concentration of thiocyanate to 12 mg. per 100 cc. neither decreased arterial pressure nor had any other demonstrable effect. Thiocyanate concentration was therefore increased to 18 mg. per 100 cc. at which time his systolic pressure fell to 158 mm. of mercury. The patient was so lethargic and wretched that treatment had to be discontinued. Urea clearance in the following month was not changed as a result of his experience.

Case 2. C. L. H., a man, aged 53, who was known to have been hypertensive for ten years and whose pressure averaged 210/150 was started on potassium thiocyanate. There were no symptoms except his concern over hypertension. Potassium thiocyanate dosage was increased until a concentration of 14 mg. per 100 cc. was reached when treatment was discontinued due to the patient's lethargy and feeling of achiness. The lowest blood pressure reading at that time was 195/98, a pressure that previously had been duplicated by sedation and encouragement.

Read before the Indianapolis Medical Society, Indianapolis, Indiana, March 4, 1941.

Case 3. H. N., a woman, aged 52, complaining of headaches, exhaustion and nocturnal dyspnea had an average blood pressure during three months in 1939 of 215/120. She was started on potassium thiocyanate. On a dose of 12 grains a day a concentration of 10 mg. per 100 cc. was attained. She became symptom free and had a fall of mean systolic pressure of 50 mm. of mercury that has been maintained. Her pressure and symptoms returned when she discontinued treatment for a month in the spring of 1940.

Case 4. J. T. H., a man, aged 41, was first seen in August of 1937. Between that time and June of 1938, when he was started on potassium thiocyanate, his blood pressure fluctuated from 212 to 266 systolic and from 108 to 140 diastolic. He had headaches, nocturnal dyspnea and vertigo so severe that he had ceased driving his automobile. There was left axis deviation with inversion of the T waves in his electrocardiograms. There were no significant urinary findings. The ocular fundi showed no hemorrhages, exudate nor papilledema. On a dose of 7 grains a day he achieved a blood concentration of thiocyanate of 7 mg. per cent with a marked symptomatic improvement and a drop in pressure to approximately 170/100. For the last three years, with the exception of twice when he stopped his medication and had a return of symptoms, he has continued on thiocyanate and remained symptom free.

Case 5. C. C. C., a man, aged 49, had had a thyroidectomy in the fall of 1939 because of emotional instability in association with a basal metabolic rate of plus 18. His blood pressure at the time of his hospitalization was 206/134. At the time he was first seen his blood pressure was 232/114. On sedation and encouragement systolic blood pressure dropped as low as 188 but could not be kept at this point without bed rest. For the last eight months on potassium thiocyanate he has been able to lead an otherwise normal and almost unrestricted life with a blood pressure around 180/100.

#### SUMMARY AND COMMENTS

Five cases of hypertension have been reviewed because it was felt that they represent distinct clinical problems and may serve as guides in the selection of cases when treatment with thiocyanate is being considered.

Case 1 was a man with a malignant hypertension and was included to point out the skepticism with which one should approach thiocyanate management in this group. Like all other types of treatment, the thiocyanate salts have no effect in altering the inevitable progress of malignant hypertension; nor are the mental confusion and vertigo appreciably modified by this type of treatment although some patients, even in the malignant phase, find some relief from the frequency and severity of their headaches.

Case 2 was that of a man with a fairly long standing and asymptomatic essential hypertension. He was started on potassium thiocyanate at his own request. The maximum response that could be expected was a reduction in blood pressure. It did not occur.

Cases 3 and 4 were hypertensive patients not in a malignant phase but with many symptoms referable to their basic vascular disease. They demonstrate the satisfactory results that one frequently sees in this group. The T wave inversion referred to in the electrocardiogram in case 4 became upright with thiocyanate medication and has so re-

mained during the three years that he has continued on treatment.

Case 5 was selected because it represents a problem that is seen frequently. It is my opinion that thyroidectomies done on hypertensive patients with only modestly increased basal metabolic rates are doomed to ultimate failure in a large majority of cases. Frequently these are patients in whom the hypertensive diencephalic syndrome is confused with hyperthyroidism so that surgery furnishes at best transient psychotherapeutic help. This type of patient usually does well on thiocyanate.

Because of the wide variation in the oral dose levels that are given to achieve the same blood concentration of thiocyanate, it would seem imperative that no patients be put on thiocyanate unless there are adequate blood studies. Because this laboratory work is time consuming, the need for proper selection of cases is obvious.

In the first two weeks of treatment, even with low blood concentrations, the patients sometimes notice considerable fatigue and sometimes feel worse rather than better. These symptoms clear as treatment is continued and in my experience have no relation to helping to anticipate which patient will have a satisfactory response to treatment and which will not.

An exanthematous eruption which resembles German measles sometimes develops in the first weeks of treatment. If thiocyanate is discontinued the rash promptly disappears and, in my experience, does not recur if treatment is started again. This likewise has no relation to the type of response to be expected in the treatment.

There are two salutary responses that one may expect in this type of treatment, decrease of blood pressure and symptomatic improvement. They both may occur in the same patient but they are by no means closely correlated as any patient may have the one without the other.

For the highest percentage of favorable responses in thiocyanate medication it is suggested that one select patients in the so-called "essential" phase of their hypertension with symptoms referable to this condition such as headaches, vertigo, dyspnea and emotional instability.

224 Hume-Mansur Building.

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#### FEEDING EGG YOLK POWDER CAUSED GAIN IN WEIGHT OF 9 OUT OF 10 PATIENTS

The feeding of egg yolk powder caused 9 of 10 patients to gain weight, whereas previous high calory diets supplemented by vitamins had failed, Alfred Steiner, M.D., New York, reports in *The Journal of the American Medical Association* for June 21.

# THE JOURNAL

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JULY, 1941

## EDITORIALS

### THE PLATFORM OF THE AMERICAN MEDICAL ASSOCIATION

The American Medical Association advocates:

**1. The establishment of an agency of federal government under which shall be coordinated and administered all medical and health functions of the federal government exclusive of those of the Army and Navy.**

**2. The allotment of such funds as the Congress may make available to any state in actual need for the prevention of disease, the promotion of health and the care of the sick on proof of such need.**

**3. The principle that the care of the public health and the provision of medical service to the sick is primarily a local responsibility.**

**4. The development of a mechanism for meeting the needs of expansion of preventive medical services with local determination of needs and local control of administration.**

**5. The extension of medical care for the indigent and the medically indigent with local determination of needs and local control of administration.**

**6. In the extension of medical services to all the people, the utmost utilization of qualified medical and hospital facilities already established.**

**7. The continued development of the private practice of medicine, subject to such changes as may be necessary to maintain the quality of medical services and to increase their availability.**

**8. Expansion of public health and medical services consistent with the American system of democracy.**

### CLEVELAND SESSION OF THE AMERICAN MEDICAL ASSOCIATION

The ninety-second annual session of the American Medical Association convened in Cleveland, June 2 to 6. Registered at the session were 7,269 Fellows. One hundred forty-nine Missouri Fellows attended the session.

The Missouri State Medical Association was represented in the House of Delegates by Drs. A. R. McComas, Sturgeon; H. L. Kerr, Crane; Robert E. Schlueter, St. Louis, and Rexford L. Diveley, Kansas City. Dr. J. Archer O'Reilly, St. Louis, was a delegate from the Section on Orthopedic Surgery; Dr. E. H. Skinner, Kansas City, from the Section on Radiology, and Dr. O. P. J. Falk, St. Louis, from the Section on Pharmacology and Therapeutics. This gave Missouri seven delegates. Dr. McComas served on the Reference Committee on Reports of Officers. Dr. Skinner was appointed a member of a new committee, Reference Committee on Military Preparedness.

St. Louis was chosen as the place of meeting in 1944. Invitations were extended by New York, Atlantic City, Philadelphia and St. Louis. Atlantic City withdrew indicating that that city would invite the American Medical Association to meet there in 1945. Dr. Robert E. Schlueter, St. Louis, presented the invitation for St. Louis on behalf of the Missouri delegation. The session in 1942 will be held in Atlantic City and in 1943 the Association will convene in San Francisco.

Both scientific and technical exhibits were outstanding as were the scientific sessions. The new Section on Anesthesiology had an excellent program that was well attended. The general scientific sessions included the clinical session, a special session on infantile paralysis in which the National Foundation for Infantile Paralysis cooperated, and a meeting on medical preparedness in which all the official agencies of the government and other agencies were well represented. Many of the sections added panel and round table discussions to their sessions.

Scientific advancement combined with military, social and economic problems in the considerations of the House of Delegates.

In regard to medical preparedness, the House recommended that some central assignment of authority must be developed, having available a full knowledge of the medical resources of the country to distribute medical personnel to meet all the various needs. The House stated that continuity of medical education is an absolute necessity in maintaining an adequate supply of physicians for all purposes.

The Council on Medical Education and Hospitals was requested by the House of Delegates to assume leadership in the work of certifying boards in the specialties, aiding them to function primarily for the good of the people and for the advancement of medical science and avoid the tendency toward the

establishment of guilds which in some instances seems to prevail.

A Committee on Pan American Relationships was established by the House of Delegates. The Committee is to promote the establishment of scientific interchange with the medical societies of South America, Mexico, Cuba, Puerto Rica and Canada. The 1942 session has been announced as a Pan American session and representatives of other American nations will be asked to participate in the session.

In executive session the House of Delegates voted to carry onward the trial of the case of the United States government versus the American Medical Association et al., in order that a decision as to the place which organized medicine is to occupy may be had from the highest courts.

An amendment to the Constitution and By-Laws increasing the number of Trustees from nine to eleven was introduced. This amendment will be acted upon at the 1942 Atlantic City Session.

The following Missouri members were elected to Affiliate Fellowship: Drs. Moses W. Hoge, St. Louis; E. C. Grim, Kirksville; C. B. Nichols, Auxvasse; Meyer Wiener, St. Louis; Wilbur L. Hollister, Corpus Christi, Texas; Jesse T. Pittam, Kansas City; Edward A. Burkhardt, Kansas City; J. Wallace Beil, Kansas City.

Dr. Fred W. Rankin, Lexington, Ky., was elected President-Elect. Dr. Rankin represented the Section on Surgery in the House of Delegates from 1935 through 1940. In 1936 he was appointed to the Council on Medical Education and Hospitals and in 1940 to the Committee on Medical Preparedness. Dr. Nathan B. Van Etten, New York, presided at the Cleveland session and Dr. Frank H. Lahey, Boston, was installed as President at the session and will preside at the Atlantic City session.

Other officers elected are: Vice President, Dr. Charles A. Dukes, Oakland, California; Secretary, Dr. Olin West, Chicago; Treasurer, Dr. Herman J. Kretschmer, Chicago; Speaker of the House of Delegates, Dr. H. H. Shoulders, Nashville; Vice Speaker, Dr. Roy W. Fouts, Omaha; Board of Trustees, Dr. Charles W. Roberts, Atlanta, and Dr. Ernest E. Irons, Chicago.

#### GROUP HOSPITAL SERVICE, INC.

Group Hospital Service, Inc., St. Louis, celebrated the fifth anniversary of its organization by a dinner meeting on May 26 at the Jefferson Hotel, St. Louis. Attending the dinner were 138 corporate members and 800 representatives of civic, industrial and employee groups.

Mr. James A. Hamilton, New Haven, Connecticut, immediate past president of the American College of Hospital Administrators and administrator of the New Haven Hospital, was the principal speaker. He stated that there are now in this country sixty-nine approved hospital service plans with an enrollment of 7,000,000 persons. He pointed out

that Group Hospital Service of St. Louis has one of the largest population percentage enrollments with one of every five persons in the St. Louis metropolitan area belonging.

Mr. Ray F. McCarthy, St. Louis, Executive Director, reported that Group Hospital Service has paid \$1,500,000 in hospital bills during the five years of the organization and now has from 1,500 to 1,700 hospital cases each month. More than 3,500 babies have been born to members.

Father Alphonse M. Schwitalla, S.J., St. Louis, secretary of Group Hospital Service, presided as toastmaster at the dinner.

Dr. Carl F. Vohs, St. Louis, was reelected a trustee. Drs. Archer O'Reilly and Major G. Seelig, St. Louis, are trustees whose terms did not expire this year. Dr. Victor E. Scherman, St. Louis, was appointed to represent the medical profession in the corporate body. Dr. Frank R. Finegan, St. Louis, was appointed to represent the DePaul Hospital.

#### NATIONAL NUTRITION

More than eight hundred physicians, dietitians, chemists and industrialists met in Washington, D. C., May 25, 26 and 27, for the first National Nutrition Conference for Defense. Paul V. McNutt, Federal Security Administrator and Coordinator of Health, Welfare and Related Defense, was in charge of the conference.

Production, distribution and consumption of food were discussed. It was pointed out that although probably the United States today is better fed than any other nation, at least 45,000,000 people in the United States are undernourished and another 50,000,000 have impaired health because they do not eat the right food.

In his message concerning the conference the President of the United States said: "Medical authorities recognize that efficiency and stamina depend on proper food. . . . Every survey of nutrition shows that here in the United States undernourishment is widespread and serious. . . . We do not lack, as we will not lack, the means of producing food in abundance and variety. Our task is to translate this abundance into reality for every American family."

At the opening session Dr. Russell Wilder, Rochester, Minnesota, chairman of the Committee on Food and Nutrition of the National Research Council and a member of the Council on Foods and Nutrition of the American Medical Association, stressed the importance of adequate attention by the medical profession to the problems of nutrition and ended his address by a plea to physicians to assume leadership in this field. Dr. Wilder paid tribute to the fundamental contributions of the American Medical Association as follows:

"The American Medical Association organized a Committee on Foods some fifteen years ago. This body, composed of a group of leading nutritional scientists and a number of physicians, undertook

to inform the medical profession and the public concerning the reliability of nutritional claims made in connection with advertising and labeling of foods. This earlier committee more recently has been renamed the Council on Foods and Nutrition. As such, it is concentrating attention on the nutritive qualities of food in general use and on the effects of various methods of processing, distribution and preparation on those qualities.

"When the President called the National Nutrition Conference for Defense, the Council on Foods and Nutrition and the Board of Trustees of the American Medical Association pledged to it their full support. They recognize the need for awakening public interest in the many problems here to be considered. They appreciate, however, that many kinds of experience are required to solve effectively the diverse problems facing us. Physicians in every community will cooperate in what needs doing, but with them must be ranged many other groups with other special training."

Dr. Lydia J. Roberts, a member of the Council on Foods and Nutrition, said concerning recommended allowances for specific nutrients:

"The recommended allowances for foods which this committee has agreed on are expressed in laboratory terms. Here is a daily diet which would measure up to these proposals: One pint of milk for an adult and more for a child; a serving of meat, and cheaper cuts are just as nutritious; one egg or some suitable substitute such as navy beans; two vegetables, one of which should be green or yellow; two fruits, one of which should be rich in vitamin C, found abundantly in citrous fruits and tomatoes; breads, flour and cereal, most or preferably all whole grain or enriched; some butter or oleomargarine with vitamin A added; other foods to satisfy the appetite.

"There are many combinations of food which meet these new requirements. America is fortunate today that it has a large number of trained nutritionalists who can translate these allowances into terms of foods available and practical in many parts of the country."

Following the general addresses, special committees in a wide variety of fields met to develop specific recommendations. These recommendations were considered by the conference as a whole during its closing sessions and will be made available as they are formulated.

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## NEWS NOTES

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A physician representing the St. Louis Health Division will call on St. Louis physicians during the summer months to acquaint them with the various services offered by the Division, according to Dr. J. F. Bredeck, Health Commissioner, who requests that the representative be received and given a few minutes time.

Dr. David B. Morgan, Kansas City, was a guest of the Lyon County (Kansas) Medical Society at Emporia, Kansas, on June 3, and spoke on "Common Skin Diseases."

Dr. James Stewart, Jefferson City, was appointed State Health Commissioner by Gov. Forrest C. Donnell on May 29. Dr. Stewart served as State Health Commissioner from 1925 to 1933.

Dr. R. S. Weiss, St. Louis, was a guest of the Massachusetts Medical Society at its 160th annual meeting in Boston, May 21. He spoke on "Lupus Erythematosus" and conducted a round table discussion on "Treatment of the Common Skin Diseases."

Dr. Frederick B. Campbell, Kansas City, was elected president, and Dr. George H. Thiele, Kansas City, treasurer, of the American Proctologic Society at the meeting of the society in Cleveland in conjunction with the American Medical Association session.

Drs. Ralph R. Coffey and A. Lloyd Stockwell, Kansas City, were guests of the Crawford County (Kansas) Medical Society at Pittsburg, Kansas, on May 29. Dr. Coffey spoke on "Management of Intestinal Obstruction" and Dr. Stockwell on "Surgical Problems in Urinary Infection."

Dr. Harry L. Alexander, St. Louis, associate professor of clinical medicine at Washington University School of Medicine, has been appointed professor of clinical medicine and acting head of the department of internal medicine to succeed Dr. David P. Barr who resigned to accept an appointment at Cornell University Medical College, New York. Dr. Alexander has been a member of the faculty since 1924.

"When Bobby Goes to School," a 16 millimeter sound film dealing with the health appraisal of the school child, is available through Mead Johnson & Company, Evansville, Indiana, for showing at any medical group. The film may be obtained for showing to lay groups by any physician upon endorsement by an officer of his county medical society. The film has no advertising and conforms to the rules of the American Academy of Pediatrics.

G. D. Searle & Co., Chicago, have begun construction of a new building in the outskirts of Chicago to house their laboratory and plant. Present accommodations will be increased approximately 400 per cent. The building will be three stories and basement of set back type with continuous windows protected by projecting fins. The exterior will be of white face brick with Bedford limestone trim. The building, in addition to laboratory and plant

facilities, will include an auditorium for staff meetings and clinical and demonstration meetings for visiting physicians, and lounges, meeting rooms and dining rooms for members of the organization.

The following products have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies:

**Armour Laboratories**

Suprarenalin Solution 1:1000, 5 cc. vial (for hypodermic use)

**Geo. A. Breon & Co., Inc.**

Tablets Ascorbic Acid—Breon, 25 mg.

Tablets Ascorbic Acid—Breon, 100 mg.

**Cutter Laboratories, Inc.**

Sobisminol Solution—Cutter, 50 cc. bottle

**Drug Products Co., Inc.**

Pulvoids Thiamine Hydrochloride, 1 mg.

Hyposols Solution of Thiamine Hydrochloride Crystals, 6.66 mg. per cc., 1 cc. ampuls; 10 cc. and 30 cc. vials

Hyposols Solution of Thiamine Hydrochloride Crystals, 10 mg. per cc.; 1 cc. ampuls; 10 cc. and 30 cc. vials

Hyposols Solution of Thiamine Hydrochloride Crystals, 33.33 mg. per cc., 1 cc. ampuls; 10 cc. and 30 cc. vials

Hyposols Solution of Thiamine Hydrochloride Crystals, 50 mg. per cc., 10 cc. ampuls; 10 cc. and 30 cc. vials

Hyposols Solution Procaine Hydrochloride 2 per cent, 2 cc.

**Endo Products, Inc.**

Ampoules Epinephrine in Oil 1:500—Endo, 1 cc.

Tablets Nicotinic Acid—Endo, 50 mg., Scored

Tablets Nicotinic Acid—Endo, 100 mg. Scored

**Flint, Eaton & Co.**

Tablets Sulfanilamide, 1 grain

Tablets Sulfanilamide, 7.7 grains

Tablets Sulfapyridine, 0.5 Gm. (7.7 grains)

Sulfathiazole Tablets, 0.5 Gm. (7.7 grains)

**Lederle Laboratories**

Tablets Aminophyllin—Lederle, 0.2 Gm. (3 grains)

**Eli Lilly & Company**

Sulfathiazole—Lilly

Tablets Sulfathiazole—Lilly, 0.25 Gm. (3¼ grains)

Tablets Sulfathiazole—Lilly, 0.5 Gm. (7½ grains)

**National Drug Company**

Tablets Sulfanilamide, 1 grain

Tablets Sulfanilamide, 7½ grains

**Schiffelin & Co.**

Sulfanilamide Tablets, 7½ grains

**Smith-Dorsey Company**

Tablets Sulfapyridine, 0.5 Gm. (7.7 grains)

**Frederick Stearns & Co.**

Ascorbic Acid Tablets—Stearns, 50 mg.

Ascorbic Acid Tablets—Stearns, 100 mg.

**Upjohn Company**

Typhoid Vaccine—Upjohn, six 2½ cc. vials package

Tablets Sulfapyridine—Upjohn, 0.5 Gm. (7.7 grains)

Tablets Sulfathiazole—Upjohn, 0.5 Gm. (7.7 grains)

**Winthrop Chemical Co., Inc.**

Pontocaine Base Eye Ointment

## DEATHS

**Dodson, John Francis, M.D.**, Kirksville, graduate of the Hahnemann Medical College of the Kansas City University, Kansas City, 1902; honor member of the Northeast Central County Medical Society; aged 75; died January 21.

**Harwood, William G., M.D.**, Dover, graduate of the Missouri Medical College, St. Louis, 1882; honor member of the Lafayette County Medical Society; aged 84; died January 28.

**Millar, Reginald C. McDonald, M.D.**, Foristell, graduate of Barnes Medical College, St. Louis, 1904; member of the St. Charles County Medical Society; aged 64; died February 19.

**Englemann, Oscar R., M.D.**, St. Louis, graduate of Washington University School of Medicine, 1906; member of the St. Louis Medical Society; died March 8.

**Fleet, John B., M.D.**, New Franklin, graduate of the National University of Arts and Sciences Medical Department, St. Louis, 1887; honor member of the Howard County Medical Society; aged 80; died March 16.

**Leonard, Homer O., M.D.**, Kansas City, graduate of Northwestern University Medical School, Chicago, 1875; honor member of the Jackson County Medical Society; aged 89; died April 25.

**Lewis, Bransford, M.D.**, St. Louis, graduate of the Missouri Medical College, St. Louis, 1884; honor member of St. Louis Medical Society; Fellow of the American Medical Association; Professor Emeritus of Urology, St. Louis University School of Medicine; aged 79; died May 18.

## MISCELLANY

### 1941 LEGISLATION

House Bill No. 495, introduced March 26 by Representative Still, which was printed in full on page 182 of the May issue of *THE JOURNAL*, was heard by the Committee on Public Health on May 27 and killed.

House Bill No. 192. Prohibiting the taking of examinations to practice any branch of the healing art except after examination in the Basic Sciences, Anatomy, Physiology, Chemistry, Bacteriology and Pathology by a state board of examiners.

This bill was heard by the Committee on Public Health on May 27 and killed.

House Bill No. 193. Prohibiting the use by any person licensed to practice medicine, surgery, dentistry, optometry, osteopathy, chiropractic, chiropody or veterinary surgery, or any two or more of such professions, and any person permitted to practice the curing, healing or remedying of ailments, defects of diseases of body or mind, from using the prefix "Doctor" or "Dr." in connection with his name in any letter, business card, advertisement, prescription blank, sign or public listing or display without affixing thereto suitable words or letters designating the degree held and

representing the profession he is authorized to practice, making violation of the Act a misdemeanor and fixing the punishment therefor, and providing that the Act shall not apply to the use of said designation by doctors of letters, doctors of science, doctors of law, doctors of divinity, or doctors of philosophy not practicing the curing, healing or remedying of bodily or mental ailments, defects or diseases.

This bill was passed by the House amended to exempt any person holding any honorary academic degree granted by any recognized school, college or university. The bill was passed by the Senate on June 18 with one amendment striking out a portion of the penalty clause. Amendment concurred in by House on June 24.

House Bill No. 194. Amending Section 9983, Article 1, Chapter 59, of the Revised Statutes of Missouri, 1939, relating to the examination and qualifications of applicants to practice medicine or surgery in this state by omitting the period after the word "equivalent" in line 15 of said Section and by inserting at the end of said line the following: "and satisfactory evidence of completion of premedical education consisting of a minimum of 60 semester hours of college credit in acceptable subjects from a reputable college or university approved by said Board."

This bill was passed by the House on April 16 and by the Senate on June 18.

House Bill No. 201. Requiring every person licensed to practice medicine or surgery in this State to register biennially with the State Board of Health, providing for the method of application and the fees for such registration, the issuance of certificates of registration, and display the same, requiring the State Board of Health to be notified of changes in the location of the registrant's office, requiring retired licensed practitioners of medicine and surgery to file affidavits with the State Board of Health in lieu of annual registration, providing for the disposal of registration fees and penalties for failure to register. (Registration fee \$1.00 per biennium.)

This bill was passed by the House on April 17 and by the Senate on June 18 with one amendment. Amendment concurred in by the House on June 24.

Senate Bill No. 15. Introduced by Senator Allen McReynolds, Carthage. To further the control of congenital syphilis by requiring a serological blood test for syphilis in pregnant women, requiring the filling out of reports to the State Department of Health, setting up supervisions necessary to protect the health of the mother and child, and provide a penalty for failure or refusal to observe the law.

This bill was passed by the Senate on April 23 with Senate amendments 1, 3, 4, 5, 6, 7, 8, 10 (2 and 9 being defeated). Read in the House on April 24 and referred to the Committee on Public Health which recommended "do pass" on May 7 with House Committee amendment 1. Passed by the House as amended on June 10. Senate refused to concur in the House Committee amendment and requested the House to recede.

Senate Bill No. 37. Introduced by Senator Michael Kinney, St. Louis. Providing for medical examination for venereal diseases of applicants for a marriage license and providing rules and regulations by the State Board of Health.

This bill was referred to the Committee on Public Health on February 20.

Senate Bill No. 7 was passed by the Senate. This bill provides for liens in favor of public and charity supported private hospitals, clinics and other institutions for the care of the sick, furnishing care, treatment and maintenance to persons injured by the negligence or wrongful act of others, upon the rights of action, claims or demands of such injured person against the persons causing such injury, for damage on account of such injury, and upon the proceeds of any settlement of any

such right of action, claim or demand; and providing for notice of and the enforcement of such liens.

This bill was passed by the House on June 10 with House Committee amendments 1, 2 and 3 and House amendment 1. Senate refused to concur and requested House to recede.

An amendment to Senate Bill 156 providing for osteopaths to practice in all Missouri county hospitals was killed by the Committee on Ways and Means of the House subsequent to a hearing on May 14.

House Bill 617. Introduced on June 4 by Representative William Barton (Montgomery County) (by request). Providing for the establishment and administration of health insurance.

This bill was referred to the Committee on Insurance.

This bill with few exceptions is identical to a proposed draft of a model state bill for health insurance prepared and, under date of September 10, 1934, disseminated by the American Association for Social Security, New York, Mr. Abraham Epstein, Executive Secretary.

### SCIENTIFIC EXHIBIT AT CLEVELAND SESSION

Outstanding at the Cleveland Session of the American Medical Association were the scientific exhibits. Several Missouri members participated in this portion of the meeting. The *Journal of the American Medical Association*, June 21, has the following to say of the exhibits:

The Scientific Exhibit at the Cleveland Session was notable for its attractiveness and for the excellent demonstrations by all who participated. New booth equipment was used throughout, including fluorescent lighting.

There were one hundred and seventy-one exhibits, one hundred and fifty-nine of which were presented under the auspices of the various sections and ten on national defense and war medicine. There were two special exhibits subsidized by the Board of Trustees and one hundred and five motion pictures, which were shown in six areas adjoining the exhibits.

The Special Exhibit on Fractures was presented for the eleventh time under the auspices of a committee composed of Dr. Kellogg Speed, Chicago, chairman; Dr. Frank D. Dickson, Kansas City, Missouri, and Dr. Walter Estell Lee, Philadelphia. Dr. Carl H. Lenhart, Cleveland, served as local representative. Nearly fifty physicians assisted with the demonstrations in six booths continuously throughout the week, and a pamphlet describing the exhibit was distributed.

The Special Exhibit on Lame Backs was presented for the second time under the auspices of a committee composed of Dr. Frank R. Ober, Boston, chairman; Dr. Carl E. Badgley, Ann Arbor, Michigan; Dr. J. Archer O'Reilly, St. Louis; Dr. Arthur Steindler, Iowa City, and Dr. Philip D. Wilson, New York, with the collaboration of Dr. Eben J. Carey, Milwaukee; Dr. Albert Ferguson, Brookline, Massachusetts; Dr. Theodore Willis, Cleveland, and Dr. Walter J. Zeiter, Cleveland. A group of fifty physicians participated throughout the week in the demonstrations, and a pamphlet describing the exhibit was distributed.

The group of exhibits on national defense and war medicine emphasized some of the factors paramount in the present emergency. Three large exhibits on the desiccation of human blood plasma received special certificates of merit. Another exhibit on aviation medicine received a bronze medal. There were six motion pictures dealing with the various phases of national defense and war medicine shown in an area adjoining the exhibits.

The Section on Practice of Medicine presented twenty-six exhibits, including a large group on heart disease

and several historical exhibits. Four exhibits received certificates of merit and four received honorable mention. Dr. Louis B. LaPlace, Philadelphia, was the section representative.

The Section on Surgery, General and Abdominal, presented twenty-six exhibits, including a group on the subject of burns and a group on cancer. To this section were awarded a gold medal, a silver medal, a bronze medal, a certificate of merit and an honorable mention. Among the motion pictures dealing with surgery were seventeen on general surgery, fourteen on the surgical aspects of cancer, nine on plastic surgery and eleven on surgical anatomy. The section representative was Dr. Grover C. Penberthy, Detroit.

The Section on Obstetrics and Gynecology presented eleven exhibits, one of which received a certificate of merit. There were five motion pictures. The section representative was Dr. H. Close Hesseltine, Chicago.

The Section on Ophthalmology had seven exhibits, one of which received a certificate of merit and one an honorable mention. There were one motion picture and one lantern slide demonstration on the subject of ophthalmology. The committee from the section consisted of Dr. Georgiana Dvorak Theobald, Oak Park, Illinois, chairman; Dr. Derrick Vail, Cincinnati, and Dr. John E. L. Keyes, Youngstown, Ohio.

The Section on Laryngology, Otology and Rhinology presented five exhibits, two of which received honorable mention. There were two motion pictures. The section representative was Dr. Fred W. Dixon, Cleveland.

The Section on Pediatrics had eight exhibits, among which were three on the control of air borne infection which received special mention. The section representative was Dr. Arthur F. Abt, Chicago.

The Section of Pharmacology and Therapeutics presented six exhibits, two of which received honorable mention. The section representative was Dr. O. P. J. Falk, St. Louis.

The Section on Pathology and Physiology had fourteen exhibits. The section representative was Dr. Frank W. Konzelmann, Philadelphia.

The Section on Nervous and Mental Diseases showed six exhibits and six motion pictures. The section representative was Dr. Frederick P. Moersch, Rochester, Minnesota.

The Section on Dermatology and Syphilology showed seven exhibits, one of which received a silver medal and three of which received certificates of merit. There were six motion pictures and a lantern slide demonstration. The representative was Dr. Hamilton Montgomery, Rochester, Minnesota.

The Section on Preventive and Industrial Medicine and Public Health presented twelve exhibits, two of which received certificates of merit. Three motion pictures were shown. The representative to the section was Dr. Paul A. Davis, Akron, Ohio.

The Section on Urology presented six exhibits, one of which received a certificate of merit and one honorable mention. There were twelve motion pictures. The section representative was Dr. John H. Morrissey, New York.

The Section on Orthopedic Surgery had six exhibits, one of which received a certificate of merit. There were three motion pictures. The section representative was Dr. Theodore A. Willis, Cleveland.

The Section on Gastro-Enterology and Proctology had six exhibits, one of which received a gold medal. There were two motion pictures. Dr. Sara M. Jordan, Boston, was the section representative.

The Section on Radiology presented five exhibits, one of which received a certificate of merit. The section representative was Dr. S. W. Donaldson, Ann Arbor, Michigan.

The Section on Anesthesiology presented eight exhibits, one of which received honorable mention. There

was one motion picture. The section representative was Dr. Paul M. Wood, New York.

Thirty-four papers read before the sections of the Scientific Assembly were correlated with the exhibits in the Scientific Exhibit.

Appreciation is expressed to Western Reserve University Medical School for the students who assisted in the demonstrations on fractures and lame backs and in the motion picture theaters.

Acknowledgment is likewise made to the many Cleveland physicians for their numerous courtesies and to the local committee on Scientific Exhibit, of which Dr. Robert M. Stecher was chairman.

## CORRESPONDENCE

### CONSERVATION OF EYESIGHT

3554 Victor Street  
St. Louis, Mo.  
June 1, 1941.

To the Editor:

I find the pamphlets on "Conservation of Eyesight"\* most instructive and good reading for the laity.

There is no better educational medium for reaching the public than this method in explaining the full significance of an eye physician.

Through the generosity of a member of the Committee on Conservation of Eyesight I have obtained a large number of pamphlets which I distributed to parents of school children. All are read with great avidity. As a member of the Public School Staff I am able to disseminate much needed knowledge.

Sincerely,  
JULIUS ROTTECK, M.D.

\*The pamphlets on "Conservation of Eyesight" are available to any member through members of the Committee on Conservation of Eyesight or the Association office.

### REMOVAL OF THYROID GLANDS EFFECTIVE IN 2 CASES OF DIABETES INSIPIDUS

Two out of 3 patients whose thyroid glands were removed as a means of treating diabetes insipidus, a comparatively rare disease marked by excessive thirst and profuse and frequent passage of urine containing no sugar, have been relieved of the condition since the operation was performed more than five years ago, Harry Blotner, M.D., and Elliott C. Cutler, M.D., Boston, report in *The Journal of the American Medical Association* for June 21.

The two men explain that available knowledge indicates "that the thyroid gland is a factor in maintaining water balance and possibly plays a role in the regulation of the intake and output of fluid in patients with diabetes insipidus. It appeared of value to apply this knowledge clinically in the treatment of diabetes insipidus. Consequently, total thyroidectomy was performed in 1935 on 3 patients with diabetes insipidus. This paper reports the results obtained on these patients after a five year interval."

The condition in the 2 relieved patients, men of 27 and 29 years of age was associated with postencephalitic Parkinson's disease (shaking palsy following inflammation of the brain). In the case of the third patient, a woman of 66, who received no relief, there appeared to be no precipitating cause for the disease. The two physicians believe that accessory thyroid tissue is present in this woman, inasmuch as the thyroidectomy had none of the effects that usually follow the operation.

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

Chariton County Medical Society, December 2, 1940.  
Montgomery County Medical Society, December 2, 1940.  
Perry County Medical Society, December 14, 1940.  
Ste. Genevieve County Medical Society, December 17, 1940.  
Howard County Medical Society, January 2, 1941.  
Camden County Medical Society, January 7, 1941.  
Andrew County Medical Society, January 9, 1941.  
Benton County Medical Society, January 28, 1941.  
Clinton County Medical Society, February 6, 1941.  
Holt County Medical Society, February 8, 1941.  
Macon County Medical Society, February 15, 1941.  
Moniteau County Medical Society, February 15, 1941.  
Mercer County Medical Society, March 12, 1941.  
Dallas-Hickory-Polk County Medical Society, April 4, 1941.  
Miller County Medical Society, April 4, 1941.  
Morgan County Medical Society, April 5, 1941.  
Johnson County Medical Society, April 11, 1941.

ASSOCIATE EDITORS: COUNCILORS OF THE  
TEN COUNCILOR DISTRICTS

MISSOURI STATE MEDICAL ASSOCIATION  
Eighty-Fourth Annual Session

St. Louis

April 28, 29, 30, 1941

MINUTES OF THE HOUSE OF DELEGATES

Hotel Jefferson

Monday, April 28, 1940

Morning Session

The first meeting of the House of Delegates of the Eighty-Fourth Annual Session of the Missouri State Medical Association was called to order at 9:30 a. m.

by the President, Dr. C. E. Burford, St. Louis, in the Crystal Room, Jefferson Hotel, St. Louis.

A quorum was reported present.

Officers, Councilors and Delegates who were present during the Annual Session follow:

#### Officers

President.....C. E. Burford, St. Louis  
President-Elect.....R. B. Denny, Creve Coeur  
Treasurer.....R. L. Thompson, St. Louis  
Executive Secretary....E. H. Bartelsmeyer, St. Louis

#### Councilors

1st District.....A. S. Bristow, Princeton  
2nd District.....H. B. Goodrich, Hannibal  
3rd District.....Curtis H. Lohr, St. Louis  
4th District.....C. E. Fallet, DeSoto  
5th District.....W. A. Bloom, Fayette  
6th District.....A. J. Campbell, Sedalia  
7th District.....F. I. Wilson, Kansas City  
8th District.....H. L. Kerr, Crane  
9th District.....E. C. Bohrer, St. Louis  
10th District.....E. J. Nienstedt, Sikeston

#### Delegates

Adair-Schuyler-  
Knox-Sullivan-  
Putnam.....E. Val Davis, Kirksville  
Adair-Schuyler-  
Knox-Sullivan-  
Putnam.....H. E. Gerwig, Downing  
Adair-Schuyler-  
Knox-Sullivan-  
Putnam.....W. Herington, Green City  
Barry.....F. T. Hargrove, Monett  
Bates.....C. J. Allen, Rich Hill  
Boone.....A. R. McComas, Sturgeon  
Buchanan.....W. T. Elam, St. Joseph  
Buchanan.....G. A. Lau, St. Joseph  
Buchanan.....F. G. Thompson, St. Joseph  
Caldwell-  
Livingston.....D. M. Dowell, Chillicothe  
Callaway.....R. N. Crews, Fulton  
Cape Girardeau.....J. H. Cochran, Cape Girardeau  
Carter-Shannon.....T. W. Cotton, Van Buren  
Cass.....D. S. Long, Harrisonville  
Chariton.....G. W. Hawkins, Salisbury  
Christian.....R. R. Farthing, Ozark  
Clay.....W. H. Goodson, Liberty  
Cole.....H. B. Stauffer, Jefferson City  
Cooper.....A. C. H. Van Ravenswaay, Boonville  
Dent.....F. E. Butler, Salem  
Dunklin.....E. L. Spence, Kennett  
Franklin.....F. G. Mays, Washington  
Greene.....Wallis Smith, Springfield  
Greene.....F. T. H'Doubler, Springfield  
Greene.....D. L. Yancey, Springfield  
Henry.....S. Kaimmer, Osceola (Warrensburg)  
Howard.....W. B. Kitchen, Glasgow  
Jackson.....Homer Beall, Kansas City  
Jackson.....J. Vardiman Bell, Kansas City  
Jackson.....Ralph R. Coffey, Kansas City  
Jackson.....Rex. L. Diveley, Kansas City  
Jackson.....Ralph E. Duncan, Kansas City  
Jackson.....Herbert L. Mantz, Kansas City  
Jackson.....A. W. McAlester, Jr., Kansas City  
Jackson.....C. Edgar Virden, Kansas City  
Jackson.....Ralph R. Wilson, Kansas City  
Jackson.....J. Paul Frick, Kansas City  
Jackson.....Harry M. Gilkey, Kansas City  
Jackson.....Edward P. Heller, Kansas City  
Jasper.....B. E. DeTar, Joplin  
Jasper.....C. W. Poor, Joplin

Johnson.....	O. B. Hall, Warrensburg
Laclede.....	James A. McComb, Lebanon
Lafayette.....	C. T. Ryland, Lexington
Lawrence-Stone.....	L. M. Lyons, Pierce City
Lewis-Clark- Scotland.....	P. W. Jennings, Canton
Lewis-Clark- Scotland.....	J. R. Bridges, Kahoka
Linn.....	R. R. Haley, Brookfield
Marion-Ralls.....	W. F. Francka, Hannibal
Miller.....	W. L. Allee, Eldon
Moniteau.....	J. P. Burke, Jr., California
Morgan.....	J. L. Washburn, Versailles
Newton.....	O. A. Sale, Neosho
Nodaway-Atchison- Gentry-Worth.....	B. F. Byland, Burlington Junction
Nodaway-Atchison- Gentry-Worth.....	C. H. Flynn, Tarkio
Pettis.....	C. D. Osborne, Sedalia
Phelps-Crawford.....	R. E. Breuer, Newburg
Phelps-Crawford.....	A. H. Horne, Rolla
Pulaski.....	C. Mallette, Crocker
Randolph-Monroe.....	J. P. Allen, Cairo
St. Charles.....	R. G. Cooper, St. Charles
St. Francois-Iron- Madison-Washington- Reynolds.....	C. H. Appleberry, Flat River
St. Francois-Iron- Madison-Washington- Reynolds.....	W. H. Barron, Fredericktown
St. Louis.....	O. P. Hampton, Jr., St. Louis
St. Louis.....	O. W. Koch, St. Louis
St. Louis.....	W. A. Smith, Webster Groves
St. Louis.....	A. W. Westrup, Webster Groves
St. Louis City.....	Alphonse McMahon, St. Louis
St. Louis City.....	Jerome E. Cook, St. Louis
St. Louis City.....	Frank P. McNalley, St. Louis
St. Louis City.....	Neil S. Moore, St. Louis
St. Louis City.....	Robert Mueller, St. Louis
St. Louis City.....	Jerome I. Simon, St. Louis
St. Louis City.....	Louis H. Kohler, St. Louis
St. Louis City.....	T. H. Hanser, St. Louis
St. Louis City.....	Madison J. Pulliam, St. Louis
St. Louis City.....	Victor E. Scherman, St. Louis
St. Louis City.....	Leo J. Hartnett, St. Louis
St. Louis City.....	Robert E. Schlueter, St. Louis
St. Louis City.....	Clinton W. Lane, St. Louis
St. Louis City.....	Ellsworth Kneal, St. Louis
St. Louis City.....	Philip S. Luedde, St. Louis
St. Louis City.....	Joseph A. Hardy, Jr., St. Louis
St. Louis City.....	J. Anthony Brennan, St. Louis
St. Louis City.....	E. Lee Dorsett, St. Louis
St. Louis City.....	Edwin C. Funsch, St. Louis
St. Louis City.....	Joseph C. Peden, St. Louis
Saline.....	R. W. Kennedy, Marshall
South Central— Howell.....	C. F. Callihan, Willow Springs
Wright.....	H. G. Frame, Mountain Grove
Stoddard.....	T. L. Waddle, Dexter (Waynesville)
Vernon-Cedar.....	C. B. Davis, II, Nevada
Vernon-Cedar.....	J. W. Dawson, Eldorado Springs
Webster.....	E. G. Beers, Seymour

On motion of Dr. W. T. Elam, St. Joseph, the reading of the minutes of the previous meeting was dispensed with and they were adopted as printed in *THE JOURNAL*.

Dr. Ralph E. Duncan, Kansas City, was elected Speaker of the House, and Dr. W. T. Elam, St. Joseph, was elected Vice Speaker.

The President, Dr. C. E. Burford, St. Louis, read his message and recommendations as follow:

## PRESIDENT'S MESSAGE AND RECOMMENDATIONS

On entering the Eighty-Fourth Annual Session of the Missouri State Medical Association, the sense of deep appreciation of the opportunity of serving the Association the last year is enhanced by the cooperation and support accorded me by the Delegates and Councilors of the Association.

While the meetings and conferences have been numerous it has given me the opportunity to visit many parts of the state and to meet the physicians at home, where I found them leaders in their communities. This has been a wholesome and profitable experience.

In going about over the state I have been impressed by the number of physicians who travel many miles to attend an important medical meeting; but there are still too many who do not avail themselves of these opportunities in their immediate neighborhood. To enlist these men in a campaign to advance the practice of medicine should be one of our first efforts. The 3,303 members of the State Association represent only slightly more than half the licensed physicians in the state.

While I am not in favor of lowering standards in any way, it seems most reasonable to believe that there are 500 men eligible for membership if their interest in organized medicine could be cultivated. It is most important to secure the membership of the young physicians who have recently graduated, before they have formed unethical associations. "As the twig is bent the tree's inclined" is especially true in medicine.

The Executive Secretary reports a gain of twelve members during 1940, making a total membership of 3,303.

An occasional visit to the headquarters office will give a better conception of the scope of its various activities than can be described. Each of you is invited to use the facilities of this office and its efficient personnel for the Association's work. Mr. E. H. Bartlesmeyer has been most diligent and efficient in keeping the committees coordinated through headquarters by contacting the county societies and by keeping the officers informed concerning all matters of general welfare of the Association.

The Committee on Publication reports the completion of the 37th volume of *THE JOURNAL*. It is well to note that the high scientific character of *THE JOURNAL* not only has been maintained but continues to improve. The income from advertising has been well maintained, which one must recognize plays an important role in the cost of publishing a journal of scientific superiority.

The report of the Committee on Medical Military Affairs submitted by Dr. Robert Mueller, State Chairman of the Committee on Medical Preparedness of the American Medical Association, in the absence of Dr. Wm. J. Shaw, its Chairman, who has been called into the Service, reflects the great amount of energy put forth by the Committee in carrying out its activities in cooperation with our most pressing problem, that of national defense. I commend the Committee for its splendid contribution.

Much more work needs to be done. I know I need not ask complete cooperation during the trying ordeals yet to come for I am fully cognizant that each will meet now, as he has always done in the past, every contingency that confronts the government in rendering adequate medical care to the armed forces and the civilian population.

When you received the program for this 84th Annual Session you must have been impressed as I was with the scientific value of the topics selected for discussion and the professional standing of the essayists who accepted the invitation to be guests. Few realize the effort put forth by the members of our Committee on Scientific Work in order to prepare a program such as the one offered this session.

I wish it were possible for every member of our Association to attend this meeting. With a membership of 3,303 we must build up our attendance to a minimum of 2,000. Other state associations with a comparable membership have done so and I am sure we can prove that the Missouri State Medical Association is no exception.

The report of the Committee on Medical Economics points out the steady growth of Group Hospital Service both in St. Louis and Kansas City as well as out in the state, now numbering over 230,000. The recommendation of the Committee suggesting the development of a low cost plan to serve the static income group including the farm group deserves your careful consideration.

The Committee on Mental Health is to be commended for its far sighted program in the suggestion of the study of laws relating to the care and treatment of the mentally ill. Every possible assistance should be rendered the Committee in carrying out this study. I hope the House of Delegates will lend the Committee its endorsement of this proposed study.

The Committee on Public Policy will present a verbal report of its activity. I am aware of the responsibility resting on the personnel of this Committee. We expect much. I hope each one of us has given support when requested to do so.

The report of the Treasurer for the year 1940 was published in *THE JOURNAL*. It notes the sum of \$3,381.00 outstanding in delinquent dues. This is \$1,070.00 less than the report of the previous year. I trust every delegate will examine this portion of the Treasurer's report and where a delinquency occurs he will carry back to his respective component society a recommendation that the delinquency for 1940 and prior be paid or adjusted at an early date.

The committees on Postgraduate Course, Defense, Cancer, Maternal Welfare and Infant Care, Fractures, Conservation of Eyesight, Industrial Health and Study of Medical Practice Laws, have submitted reports and they are in your hands. I am sure the House of Delegates will give them the serious consideration to which they justly are entitled.

In closing may I express the firm belief that this House of Delegates, representing as you do the organized medical profession of Missouri, in your deliberations will provide for meeting the ever increasing opportunities for service in community, state and nation, ever holding to your high ideal of sacrificing self interest in service to the least of God's creatures.

On motion, duly seconded, the message was referred to the Council.

Dr. Curtis H. Lohr, St. Louis, Chairman of the General Committee on Arrangements, reported as follows:

#### REPORT OF THE GENERAL COMMITTEE ON ARRANGEMENTS

The General Committee on Arrangements has been rather limited in its activities, but it has done a good job in selecting an energetic, hard working chairman of the Local Committee. We hope you will enjoy your stay and I think you will agree with me that all of the credit for this meeting belongs to the Local Committee and not to the General Committee. I thank you very much.

On motion, duly seconded, this report was accepted.

Dr. Daniel L. Sexton, St. Louis, Chairman of the Local Committee on Arrangements, reported as follows:

#### REPORT OF THE LOCAL COMMITTEE ON ARRANGEMENTS

The Local Committee on Arrangements wishes to report that all the details in connection with this meeting have been given careful consideration. Dr. Lohr

has given the credit to the Local Committee but I want to give the credit where it belongs, to the Executive Secretary and those in the office of the Missouri State Medical Association. It is very easy for the Local Committee on Arrangements to care for the meeting when we have such an efficient organization in the headquarters office as we have.

The St. Louis Medical Society will express to you its very great pleasure in having you with us at a stag dinner and entertainment tomorrow night.

It is the wish of every committee that this meeting shall be a success and if there is anything anyone can do in connection with his committee, please feel free to call on him. It is a great pleasure and privilege to welcome you here and we hope we shall have an opportunity to express that pleasure tomorrow night. I thank you.

On motion, duly seconded, the report was accepted.

The report of the Executive Secretary follows:

#### EXECUTIVE SECRETARY'S REPORT

The principal activities of the Association are reflected in the reports of the various committee chairmen and officers. Each committee has worked diligently during the year and the office has attempted to carry out instructions of the officers and the committee chairmen. The committees should be commended for their work; each year shows increased activity and efficiency of the committees and some of the newer committees are becoming a valuable part of the Association.

In addition to work of standing and special committees, a great deal of work has been done with the Committee on Medical Preparedness of the American Medical Association. This work included obtaining information by questionnaire from physicians and Missouri without doubt will compare favorably with other states when figures on this work are available for of approximately 5,400 physicians in Missouri all but 169 returned questionnaires. Information on Medical Reserve Officers and data on civilian health needs was also supplied to the Committee on Medical Preparedness.

Much effort has been expended in furthering bills in the Legislature advantageous to the health of the people of the state and in opposing bills which were detrimental to the people's health. This work will be reported at the Annual Session by the Committee on Public Policy whose report cannot be published with other reports because the General Assembly is in session at the time of this publication.

During the year the Association has been in close touch with the Farm Security Administration with regard to medical care of its clientele.

Several members of the Association have been called into active military service and without doubt more will be called within a short time. The Association has attempted to see that *THE JOURNAL* reaches these members that they may not lose touch with the Association or the Association with them.

The Nominating Committee must submit nominations for the following offices:

Three Vice Presidents to fill the vacancies created by the expiration of the terms of Drs. L. J. Schofield, Warrensburg; William J. Stewart, Columbia; Paul W. Walker, Joplin. Two delegates and corresponding alternates to the American Medical Association to fill the vacancies created by the expiration of the terms of Dr. R. Emmet Kane, St. Louis, alternate, Dr. Joseph C. Peden, St. Louis, and Dr. James R. McVay, Kansas City, alternate, Dr. C. A. W. Zimmermann, Cape Girardeau.

Honor members eligible for Affiliate Fellowship in the American Medical Association will be reported to the Council for recommendation to the House of Delegates.

The terms (two years) of the Councilors of the even numbered districts expire this year, viz., Drs. H. B. Goodrich, Hannibal, Second District; C. E. Fallet, DeSoto, Fourth District; A. J. Campbell, Sedalia, Sixth

District; H. L. Kerr, Crane, Eighth District, and E. J. Nienstedt, Sikeston, Tenth District. Delegates from these Districts are required by the Constitution to meet on the morning of the third day and elect the Councilor for their district. Since the General Meeting begins at 8:30 a. m., it is suggested that Delegates meet at 8:00 a. m. on Wednesday and elect their Councilor. The election must be certified to the House of Delegates on a prescribed form which will be furnished. Procedure of the election is outlined on page 21 of the Constitution and By-Laws as follows:

At the close of the session on the first day the Secretary shall prepare lists of the delegates registered from the various councilor districts in which vacancies are to be filled, which shall be posted in the assembly hall and a copy given to the councilors whose terms expire.

The councilors in collaboration with the delegates shall determine upon the time and place of the meeting to be held on the morning of the third day of the Annual Session. The Secretary after being notified of such meeting shall cause a notice of the meeting to be posted in the assembly hall and make an announcement of the meeting in the House of Delegates or scientific assembly. The councilor shall act as temporary chairman of the meeting of the delegates from each respective councilor district. In the event a councilor is absent the President shall designate a delegate to perform these duties. The first order of business shall be to elect from among the delegates a permanent chairman and a secretary after which the councilor shall retire from this meeting. The chairman shall state the meeting is called for the purpose of electing a councilor to serve for a period of two years and that each candidate must reside or practice in the district. Nominations shall be received from the floor. The election shall be by secret ballot and a majority of the votes cast shall be necessary to elect. In case no nominee receives a majority on the first ballot, the nominee receiving the lowest number of votes shall be dropped and a new ballot taken. This procedure shall be continued until one of the nominees receives a majority of all the votes cast when he shall be declared elected. The election shall be certified to the House of Delegates by the chairman and secretary on a form to be prescribed.

If no election has been certified from a councilor district the incumbent shall serve until the next Annual Session.

In the event a delegate or his authorized alternate has not registered at the Session in time to be included on the list prepared and posted by the Secretary, he may attend the meeting on the morning of the third day of the Session and cast his vote for the election of a councilor, provided he has registered at the Session and his delegate's credentials bear the approval of the Committee on Credentials, and be it

*Resolved*, That this resolution meets with the approval of the Council and is respectfully submitted to the House of Delegates at the 1939 Annual Session.

To the Secretary of the Missouri State Medical Association: This is to certify that at a meeting of the ..... Councilor District held on ..... at ..... a. m. .... of ..... was duly elected Councilor for a period of two years in accordance with Section 2, Article IX, of the Constitution with the resolution adopted by the House of Delegates outlining the method of election. .... delegates were present.

.....Chairman.  
.....Secretary.  
.....Mo., Date.....

The Committee on Scientific Work has prepared an excellent program for the Session. Thirteen guest speakers accepted invitations, eleven of them to present two addresses each. A number of our members will have scientific exhibits which promise to have practical instructive value. Forty commercial firms accepted our invitation to exhibit their products. The Committee on Scientific Work feels that this opportunity of obtaining information on the newer products and apparatus is a valuable part of the session. Also, the Commercial Exhibit aid in defraying the expenses of an Annual Session and courtesy to the exhibitors prompts them to exhibit at future meetings. A preliminary program containing detailed information of the Session will be sent to each member prior to the Session.

In 1940 there was a gain in total membership of twelve; in 1939 there was a gain of one.

#### Status of Membership

Number of members, Jan. 1, 1940 .....	3,291
New Members .....	153
Reinstated .....	16
Total .....	3,460

Dropped .....	53
Deceased .....	73
Transferred .....	31
	157

Total, Jan. 1, 1941 ..... 3,303  
Of this total 273 are Honor Members.

The Annual Banquet of the Association in honor of Past Presidents will be held on Monday evening, April 28, in the Gold Room of Hotel Jefferson. We are fortunate in having as our guest speaker on this occasion Dr. Morris Fishbein, Chicago, Editor of the *Journal of the American Medical Association*. His topic will be "American Medicine Prepares." The members of the House of Delegates, Presidents and Secretaries of County Medical Societies, the members of the Association and their guests and the Woman's Auxiliary are invited. Dr. Cyrus E. Burford, St. Louis, will preside. The dinner will be informal and a President's Reception and dancing will follow. The Council has authorized that the secretaries of county medical societies will be the guests of the Association for this occasion.

Secretaries of all county medical societies as well as all members are urged to consider headquarters office as their office, the facilities of which at all times are available for rendering services to societies and members.

The Executive Secretary desires to extend to the officers of the Association, the Editor, the individual Councilors, members of the committees, presidents and secretaries of component county societies and the members of the Association his sincere appreciation for the assistance, advice and close cooperation accorded him in carrying out the activities of the Association during the last year. He is also very appreciative of the efficient services rendered by his assistants whose loyalty has made many seemingly impossible tasks not only possible but enjoyable. And, finally, he desires to extend to the officers and committees of the St. Louis Medical Society, our hosts, his gratitude for their loyal cooperation in providing ample facilities for the comfort and enjoyment of members during the Session.

E. H. BARTELSMEYER.

The report was referred to the Council.

The report of the Treasurer follows:

#### REPORT OF THE TREASURER

The report of the Treasurer up to January 1941 has been published and my report today is to bring it up to the present time. The statement today reads as follows:

Cash on hand	
December 31, 1940 .....	\$12,066.31
Receipts .....	17,280.54
Total cash to be accounted for .....	\$29,346.85
Disbursements .....	7,855.41

Leaving a cash balance on March 31, 1941 \$21,491.44

RALPH L. THOMPSON, Treasurer.

The report was referred to the Council.

The Speaker appointed the following reference committees:

#### Reference Committee on Amendments to Constitution and By-Laws

O. W. Koch, St. Louis, Chairman  
W. F. Francka, Hannibal  
R. E. Breuer, Newburg

#### Reference Committee on Resolutions

J. H. Cochran, Cape Girardeau, Chairman  
H. L. Mantz, Kansas City  
R. R. Farthing, Ozark.

**Reference Committee on Miscellaneous Affairs**

F. E. Butler, Salem, Chairman  
A. R. McComas, Sturgeon  
E. L. Spence, Kennett

**Reference Committee on Medical Education and Public Welfare**

Wallis Smith, Springfield, Chairman  
Jerome E. Cook, St. Louis  
Donald M. Dowell, Chillicothe

The report of the Committee on Scientific Work, Dr. James E. Stowers, Kansas City, Chairman, follows:

**REPORT OF THE COMMITTEE ON SCIENTIFIC WORK**

The Committee on Scientific Work reports an outstanding program for the St. Louis Session. In addition to presentations by members, thirteen guest speakers have accepted invitations to present addresses and assist with round table luncheon discussions on Tuesday and Wednesday of the Session. For members who are not attending the House of Delegates on Monday morning, a dry clinic will be presented at 10:00 a. m. Scientific exhibits will be presented by members.

The Committee appreciates the cooperation of the officers and Council in obtaining this program.

JAMES E. STOWERS, Chairman,  
RALPH A. KINSELLA,  
FRANKLIN E. WALTON,  
DUDLEY S. CONLEY,  
RALPH R. COFFEY,  
STANLEY P. HOWARD.

On motion, duly seconded, the report was accepted.

The report of the Committee on Postgraduate Course, Dr. C. H. Neilson, St. Louis, Chairman, follows:

**REPORT OF THE COMMITTEE ON POSTGRADUATE COURSE**

The Committee on Postgraduate Course has sent seventy-four speakers to forty-five meetings of nineteen county medical societies. These figures are a little lower than for the preceding year. However, postgraduate instruction is not decreasing in the state for other committees are active and furnishing speakers in their individual fields. The Committee on Fractures, the Committee on Cancer and the Committee on Mental Health have been especially active; the Committee on Medical Economics has furnished speakers as have several other committees. The Postgraduate Committee has continued to furnish speakers on general subjects in medicine and surgery. This Committee is gratified that the committees in special fields are doing such good work.

The Postgraduate Correlating Committee which cooperated with the Committee on Publication in furnishing speakers on subjects on which symposia appeared in *THE JOURNAL* has not functioned this year because the great number of manuscripts submitted for publication in *THE JOURNAL* made carrying of symposia impossible. It is hoped that symposia and correlated programs may be resumed this year.

The Committee again recommends councilor district meetings of one or two days with papers, symposia and clinics. These meetings could be held in towns large enough to furnish clinic material. The Committee will be glad to cooperate with councilors in planning such meetings.

C. H. NEILSON, Chairman,  
REXFORD L. DIVELEY,  
RALPH E. DUNCAN,  
M. PINSON NEAL,  
G. T. BLOOMER.

On motion, duly seconded, the report was accepted.

The report of the Committee on Publication, Dr. Walter Baumgarten, St. Louis, Chairman, follows:

**REPORT OF THE COMMITTEE ON PUBLICATION**

January 1, 1940, to January 1, 1941

The 37th Volume of *THE JOURNAL* was completed with the December issue. During 1940 there were published in *THE JOURNAL* ninety-six original articles, nine special articles, forty-eight editorials, one hundred thirteen news items, eighty-two obituaries, eighty-eight society proceedings, five Woman's Auxiliary reports, two miscellaneous articles, one correspondence, eighty-seven book reviews, thirty-three books for leisure moments, twenty-three commercial announcements, nineteen organization activity articles and four articles from the State Board of Health. There were 526 pages of reading material and 378 advertising pages. Seventy-four books were received for review in *THE JOURNAL* and were distributed to medical libraries in the state. Twenty-five books were received for books for leisure moments.

Advertising in *THE JOURNAL* from January 1, 1940, to January 1, 1941, earned \$8,642.12, with \$1,719.50 to be collected, totaling \$10,361.62. Subscriptions of non-members amounted to \$34.35, making \$10,395.97 actually earned by *THE JOURNAL*. The cost of production of *THE JOURNAL* (printing and illustrations) was \$7,072.79.

The Committee wishes to express deep appreciation of the continuing administrative ability and great assistance rendered by Mr. Bartelsmeyer, the Executive Secretary, and Miss Helen Penn, the Assistant Editor.

WALTER BAUMGARTEN, Chairman,  
M. H. SHELBY,  
R. C. HAYNES,  
RICHARD B. SCHUTZ.

On motion, duly seconded, the report was accepted.

**REPORT OF THE COMMITTEE ON PUBLIC POLICY**

Dr. Morris B. Simpson, Kansas City, Chairman, reported on the status of various bills in the General Assembly of Missouri.

On motion, duly seconded, the report was accepted.

The report of the Committee on Defense, Dr. C. E. Hyndman, St. Louis, Chairman, follows:

**REPORT OF THE COMMITTEE ON DEFENSE**

April 1, 1940, to April 1, 1941

**Status of Cases**

Cases pending March 1, 1940 .....	7
Threats pending March 1, 1940 .....	0
New cases (April 1, 1940, to April 1, 1941) .....	8
New threats (April 1, 1940, to April 1, 1941) .....	0
Cases settled during year .....	8
Threats dropped during year .....	0
Cases pending March 1, 1941 .....	7
Threats pending March 1, 1941 .....	0

The disposition of the eight cases settled during the year was: three thrown out of court; one plaintiff dropped prosecution; one instructed verdict for defendant; one plaintiff demurred out of court, one case compromised, and one case dismissed. The Association paid \$145.00 toward expenses in two cases.

C. E. HYNDMAN, Chairman,  
M. L. KLINEFELTER,  
M. J. OWENS,  
O. B. ZEINERT,  
L. P. FORGRAVE.

Dr. Hyndman, Chairman, reporting further, said: I have nothing to add to the printed report except that

we are gratified with the way damage suits and malpractice suits are being handled by the insurance companies, which shows that nearly all physicians are carrying insurance, as they should. This list in the printed report represents only a small part of the malpractice suits that are going on. On my desk I have perhaps twelve or fourteen others that have not been reported by the physicians but have come to me indirectly through the insurance companies for advice. Scarcely a week passes that your Committee is not consulted by attorneys and physicians for advice as to what to do, what sort of witnesses to get and what sort of defense to make. Both local insurance companies have cooperated thoroughly with us and many times we have helped even nonmembers in the way of advice.

As you see in the report, very little money has been spent this year; it has practically all been taken care of by insurance companies.

On motion, duly seconded, this report was referred to the Council.

The report of the Committee on Cancer, Dr. Dudley A. Robnett, Columbia, Chairman, follows:

### REPORT OF THE COMMITTEE ON CANCER

The activities of the Committee on Cancer this year have been centered largely around the work at the Ellis Fischel State Cancer Hospital, Columbia. The Committee has been called upon to sponsor few society meetings and relatively few meetings of the Women's Field Army.

The Committee and members of the Association have taken an active part in the program at the State Cancer Hospital; some sixty members of the Association including the members of the Committee are members of the consulting staff of that hospital. The Committee has had the full cooperation of the State Cancer Commission, the medical director of the Hospital and the resident staff.

The organization and work at the State Cancer Hospital in the last year have proved the broad scope of that institution and the Committee feels that it is of vital importance to the medical profession and to its patients that the Association assume the responsibility which is its and which the Cancer Commission wishes it to take. This can best be done by the organization of cancer clinics in the various county societies and active interest and participation in the indigent cancer program by the members of the cancer committees in the various county societies. Cooperation between these committees, their respective county courts and the State Hospital is of great importance.

DUDLEY A. ROBNETT, Chairman,  
EDWIN C. ERNST,  
E. KIP ROBINSON,  
WILLIAM E. LEIGHTON,  
F. G. THOMPSON.

Dr. Robnett, Chairman, reporting further, said: I want to emphasize that this Committee feels it is extremely important that the cancer committees of the respective societies take an active part in the indigent cancer program and should cooperate with the county courts. It would be of great value to the Cancer Commission if the local societies would take charge of the work and see that it stays in the hands of the medical society and the physicians of the community rather than letting it drift where it is tending in some communities. I therefore urge you to go back to your societies and ask the cancer committees to get busy on that program. Also there should be close cooperation between the county societies, their cancer committees, the Cancer Commission and the State Hospital in Columbia.

On motion, duly seconded, the report was accepted.

The report of the Committee on Medical Economics, Dr. Carl F. Vohs, St. Louis, Chairman, follows:

### REPORT OF THE COMMITTEE ON MEDICAL ECONOMICS

The Committee on Medical Economics held two meetings during the last year discussing and further developing the program adopted by the Missouri State Medical Association.

The following subject matter was considered at great length: the practices of men called into military service; Group Hospitalization; Farm Security Administration "pooling system" plan; prepayment medical plan; Health Security Administration of the State of Missouri; Workmen's Compensation Act; Basic Science Law; Medical Lien Law.

Ways and means whereby better contact might be had between members of the Committee on Medical Economics, county medical societies and members of the Association were discussed. It was suggested that the state be divided into five districts and that a member of the Committee on Medical Economics be appointed to study the problem in each district and report to the Committee as a whole. The following assignment of Councilor Districts was made: Dr. Ira H. Lockwood, Kansas City, Councilor Districts 7 and 8; Dr. E. L. Johnston, Concordia, Councilor Districts 1 and 6; Dr. W. F. Francka, Hannibal, Councilor Districts 2 and 5; Dr. Carl F. Vohs, St. Louis, Councilor Districts 3 and 4; Dr. C. A. W. Zimmermann, Cape Girardeau, Councilor Districts 9 and 10.

#### Military Service Fund

The Committee on Medical Preparedness had referred the problem of the care of the practices of men called into military service to the Committee on Medical Economics for study and recommendation to the Council. In general it was thought best to refer this problem back to the Committee on Medical Preparedness with the following suggestion: That an effort be made by physicians to determine the sources of new patients and if they had been patients of men called into service that these patients be taken care of and the income divided on some percentage basis, preferably a fifty-fifty division, and the moneys received for caring for these patients be turned over individually to the physician in service or handled through a special committee of the county medical society. The first suggestion was thought probably best in the rural communities and the second in the larger places.

#### Hospital Service Plans

The fourth annual report of Group Hospital Service of St. Louis was not read in detail but was received by the Committee and the accomplishments and success of the plan were noted with gratification. The organization now consists of 170,000 members in the St. Louis plan. The Kansas City plan has a membership of about 60,000 persons. With accrued reserves of more than \$300,000, it is felt that the St. Louis plan is one of the most successful financially in the country. It was, however, the consensus of opinion that certain warnings as developed by statistics must be heeded.

Original rates were based on an estimate that the maximum hospitalization which would be required would be one day per member per year. The following has been the experience of Group Hospital Service to date:

Year	1	2	3
	Patient Days Per Member Year	Average Stay	Admissions Per Member Year
1936	56% of a day	8.43 days	1 member out of 15
1937	86% of a day	9.62 days	1 member out of 11
1938	85% of a day	8.94 days	1 member out of 10
1939	93% of a day	8.93 days	1 member out of 9
1940	97% of a day	8.76 days	1 member out of 8

By these data it will be noted that the plan is rapidly approaching the estimated one day per member per year (column 1), and that although hospital stay has not seemed to increase on the average (column 2), the ratio of admissions has jumped about 70 per cent (col-

umn 3). In the first year of the plan, one out of fifteen members was hospitalized per year whereas at present the rate is one out of every eight. The conclusion was reached that word should be passed to the staff members of the affiliated hospitals to be more careful of the admissions to hospitals and to discharge their patients as soon as it is medically possible. This will also help to make more beds available for needy patients in the crowded hospitals.

It was observed that especially during the busy season, hospital beds were very scarce; hospitals are rapidly reaching their capacity. It was felt that the need for other than hospital beds for acute cases was fairly well established; that convalescent and chronic invalid homes should be developed in conjunction with present institutions. In this way more hospitalization could be achieved without raising the total cost of medical care too much. It was suggested that the Committee work through the county medical societies and civic and state organizations to analyze and establish this need.

The Chairman of the Committee on Medical Economics emphasized the fact that this study was a voluntary action on their part and had not been requested by the Trustees of Group Hospital Service. The Missouri State Medical Association's interest in Group Hospital Service is equal, if not paramount, to all other interests and it is incumbent upon the Committee charged with the duty of supervising its program to make certain that it will continue to serve the community as it is now doing. The experience as stated indicates that the doctors can take immediate steps to alleviate crowded conditions and any possible abuses to this civic plan.

#### Medical Budget Plans

A further suggestion by the Committee was the need of urging hospitals to cooperate as much as possible with the Medical-Dental Service Bureau. Since the Bureau was established to assist in a postpayment budget plan without cost to the patient in order to serve the near medically indigent group, it was felt that this desirable service could be rendered many more persons. Its principal objective is to encourage self help and make all such patients at least part-pay cases.

Because of the low income of most farm families, the necessity of a low cost hospital plan was discussed in connection with the Farm Security Administration Hospital Plan. At the present time there are 32,000 families in Missouri in the Farm Security Administration Plan. The final conclusion of the Committee was a recommendation that a low cost plan be studied carefully and put in operation on an experimental basis in selected communities by Group Hospital Service, Inc.

The problem of osteopaths in relation to Group Hospitalization plans was discussed and it was felt that standards of many of the smaller hospitals have been raised because of the requirements that the hospitals must be approved by the American Medical Association and the American College of Surgeons before they can become a participating hospital in Group Hospitalization plans.

The Committee recommended that Group Hospital Service, Inc., study and take such steps as seem feasible regarding the men and women who may be called into military service.

The Farm Security Administration developments were studied closely. There are now forty-six counties operating or about to operate under this program. The last report, made on September 30, 1940, showed that there were 5,421 people enrolled with four hundred five physicians cooperating and that a total of \$50,154.00 had been paid for this service. The Committee feels that this is money the physicians would not have received had it not been for this program. Most of the people enrolled would have been charity cases.

The Committee recommended that study of prepayment medical plans be continued, especially of plans in other states. It was suggested that Dr. C. A. W. Zim-

mermann, Cape Girardeau, study in detail the California plan; Dr. Ira H. Lockwood, Kansas City, study the Pittsburgh plan, and Dr. E. L. Johnston, Concordia, study the Erie plan. The Committee expressed its feeling that any prepayment medical plan should be limited to service contracts as a community project to certain low income level groups.

#### State Coordination

Dr. Carl F. Vohs, St. Louis, was to continue the study of the Health Security Administration of the State of Missouri and report later. To further the development, it was suggested that a committee made up of equal numbers of the medical profession, hospital groups and the public be appointed by the Governor to study such a plan that will cover completely the medically indigent. This program was approved at the Cape Girardeau Annual Session.

The Committee recommended that further study of the Workmen's Compensation Act be carried out, especially along the line of the New York Plan with the idea in mind of improving the Missouri Workmen's Compensation Act.

After investigation and gathering information from as many sources as possible the following conclusions were reached:

1. Injured employee: It seems to the Committee that the average employee is fairly well satisfied with the Act as a whole, with two exceptions. First, they have difficulty in obtaining their money for settlements in the majority of cases, being forced to employ an attorney in order to settle the claim. Whether this is the fault of the claim agent or the employee is debatable. The second complaint is the inability to employ their family physician or a physician of their choice to care for them when injured.

2. The legal profession: One group of lawyers states that the Act is a nuisance and that, in their opinion, it should be repealed. On the other hand, there is a large number of attorneys who admit that the Act has worked out much better than anticipated and that, on the average, compensation is more equably distributed than before.

3. Employer: The major complaint is that the insurance premium is too high.

4. Insurance broker: There are no complaints of any serious consequence.

5. Insurance company: The insurance company is very much in favor of having the Act stand as it is, with serious objections in regard to any change that would allow the employee the choice of physician.

6. Physicians: It seems to be the consensus of opinion that the Act should be so altered to allow free choice of physician. Many and varied reasons are given for this opinion but only two points will be touched on here. It is pointed out that it is not an established fact that the employee has the advantage of an unbiased opinion on the witness stand by the physician who is being used repeatedly and paid by the insurance company, especially if the physician derives a good portion of his income for that type of work. It is pointed out also that the physician selected by the insurance company is not always the most competent in his community; at times the actual qualifications are being questioned. Remember that in many communities the insurance broker selects the physician.

It is therefore recommended to the Association that an attempt be made to alter the Act to correspond in general to the law now in force in the State of New York, changes in detail to be worked out as would seem advisable at the time.

The Committee recommends:

1. The adoption of a resolution by the House of Delegates commending the good work of Group Hospital Service of St. Louis and Kansas City and suggesting the development of a low cost plan to serve the static income group and the farmers.

2. The introduction of the following bills in the State Legislature:

1. Basic Science Law.
2. Medical Lien Law.
3. Revision of the Workmen's Compensation Act.

3. The study and development of a medical service plan under the control of the State Medical Association.

4. The development of the Health Security Administration of Missouri.

5. The appointment of a special committee to study and recommend the types of hospitals to be built in the state in the future.

CARL F. VOHS, Chairman,  
W. F. FRANCKA,  
IRA H. LOCKWOOD,  
E. L. JOHNSTON,  
C. A. W. ZIMMERMANN.

Dr. Vohs, Chairman, reporting further, said: I would like to emphasize one or two points for your specific study and recommendation. Our greatest difficulty in the last year, as in other years, is to find out what the county societies are doing along medical economic lines. We have had great difficulty in contacting the secretaries of county societies. To facilitate matters, we divided the councilor districts among members of this committee. The following assignment was made: Dr. Ira H. Lockwood, Kansas City, Councilor Districts 7 and 8; Dr. E. L. Johnston, Concordia, Councilor Districts 1 and 6; Dr. W. F. Francka, Hannibal, Councilor Districts 2 and 5; Dr. Carl F. Vohs, St. Louis, Councilor Districts 3 and 4; Dr. C. A. W. Zimmermann, Cape Girardeau, Councilor Districts 9 and 10. I wish the delegates would check up on these assignments and give us the benefit of their experience in the development of a state program. That would save a lot of trouble. Recently, in Southeastern Missouri, the F. S. A. was working on a program that was not approved by the county medical society and there was considerable confusion. If those things are approved it will save a lot of difficulty for the committee and the societies.

The Committee has made two or three recommendations. One is the adoption by the House of Delegates of a commendation of the good work of Group Hospital Service, Inc., in St. Louis and Kansas City. We hope the reference committee will give a favorable report.

The second recommendation is the study and development of a medical service plan under the control of the State Medical Association. This Committee has studied the statistics of other plans working in the country and whenever you give us the sign we are ready to go. However, we think this House of Delegates should stay in line with the development and progress made by other state associations.

Third is the appointment of a special committee to study and recommend the types of hospitals to be built in the state in the future. We think that this is a vital recommendation. Hospitals are needed, especially in the larger communities. In the last year their capacity has just about been reached. Who knows more about the type of hospital that should be built and where it should be built than the medical profession? We should have something to say about the workshop where we are to work. Therefore it is important that we have a good, live committee appointed by the State Association which will work with other committees and with the Missouri State Hospital Association and probably with a committee at large appointed by the Governor.

We feel that this is the time that these matters should come before the House of Delegates and the Committee on Medical Economics will be glad to sit in with the reference committee and go into greater detail in the discussion of these recommendations.

On motion, duly seconded, this report was referred

to the Reference Committee on Medical Education and Public Welfare.

On motion, duly seconded, the Secretary was instructed to send a telegram of condolence to Dr. E. Lee Miller, Kansas City, Chairman of the Committee on Health and Public Instruction, who was unable to be present because of illness.

The report of the Committee on Fractures, Dr. Frank D. Dickson, Kansas City, Chairman, follows:

## REPORT OF THE COMMITTEE ON FRACTURES

The Committee on Fractures met on November 5 in the office of the Chairman, Dr. Frank D. Dickson, Kansas City.

At this meeting plans were worked out for the incorporation of papers on fractures at the Annual Session. The setting up of a fracture exhibit, modeled after that of the American Medical Association, and the desirability of county fracture meetings during the year were stressed.

A report of these recommendations was sent to the Council at its meeting in St. Louis the following month with the suggestion that such county meetings could best be held at the time of Councilor District meetings. Each Councilor was then written about this plan and urged to consider the advisability of a fracture program during the winter and fall in his district. The responses to this suggestion have been a little slow with the result that so far but two such meetings have been held. These were at Mount Vernon on February 18 and at Clayton on April 1. A meeting at Columbia is planned and tentative plans are being made for a meeting at Cape Girardeau in May.

The Committee will have a fracture exhibit at the Annual Session in St. Louis and hopes earnestly that once this program gets under way a more active and enthusiastic response from the individual county medical societies will be obtained during the coming year.

FRANK D. DICKSON, Chairman,  
H. K. WALLACE,  
WILLIAM J. STEWART,  
M. L. KLINEFELTER,  
JAMES D. HORTON,  
J. P. MURPHY,  
F. G. PIPKIN,  
D. L. YANCEY.

On motion, duly seconded, the report was referred to the Reference Committee on Miscellaneous Affairs.

The report of the Committee on Conservation of Eyesight, Dr. Winfred L. Post, Joplin, Chairman, follows:

## REPORT OF THE COMMITTEE ON CONSERVATION OF EYESIGHT

During the year the Committee on Conservation of Eyesight has sponsored eleven talks to medical groups reaching approximately 500 persons, nine radio addresses, two exhibits, has compiled and distributed 5,000 pamphlets, had five articles printed, conducted one and assisted in another essay contest.

The activities of the Committee are principally educational and, in addition, keeping in contact with other groups and committees interested in conservation of eyesight.

Educational activities include talks before lay audiences with the showing of films and distribution of pamphlets, radio talks on subjects of eye health and prevention of blindness and papers before medical societies. The Committee is working on a series of educational exhibits for use at county, district and state medical meetings. Newspapers and radio stations were urged to use materials furnished by the National Society for the Prevention of Blindness calling for care in the use of fireworks on the Fourth of July. This material was

mildly quoted and in one instance a lay group sponsored a minute spot on the radio every hour the day preceding the Fourth. Another factor of education was a school essay contest sponsored by the Woman's Auxiliary supervised by Mrs. J. J. Drace, Cape Girardeau, and under the advisory of Dr. John McLeod for the Committee. The pamphlet which has been distributed was written and designed by Dr. C. P. Dyer and the initial number of 5,000 is almost exhausted. An exhibit was presented at the Missouri State Fair in conjunction with the State Board of Health urging the need of an anti-fireworks law and pamphlets were distributed.

The Committee is helping the St. Louis Safety Council in seeking passage of House Bill No. 160. In this movement some 195 letters have been written to key men in lay organizations who may support the bill.

I am happy to report that the resolution, adopted by the House of Delegates of the Missouri State Medical Association, requisitioning the American Medical Association to establish a Committee on Conservation of Eyesight was passed by the American Medical Association after minor changes had been made. The Chairman is appreciative of advice he received in this connection.

WINFRED L. POST, Chairman,  
JOHN MCLEOD,  
C. P. DYER,  
PHILIP S. LUEDDE,  
ROBERT S. MINTON,  
GEORGE A. HORNBACK,  
G. J. TYGETT,  
C. R. BRUNER,  
C. SOUTER SMITH.

Dr. John McLeod, Kansas City, member, reporting further, said: The number of people reached by our Committee through radio programs and talks is incomplete in the report. There have been a number of talks made that do not appear in the report. We are quite enthusiastic about the work, especially the essays turned in in the Essay Contest conducted by the Woman's Auxiliary on the subject, "Conservation of Eyesight." One or two of them were very impressive. We hope to do even more next year than we have in the last two years.

On motion, duly seconded, the report was accepted.

The report of the Committee on Mental Health, Dr. B. Landis Elliott, Kansas City, Chairman, follows:

#### REPORT OF THE COMMITTEE ON MENTAL HEALTH

In October 1940 The Missouri Association for Mental Hygiene adopted certain proposals which were intended to establish better standards of care and treatment for the mentally ill in the State of Missouri. This was to be done by revising laws which were inadequate and antiquated and which did not protect the interest of the individual and of the community properly.

Some of these proposals include the assumption of entire responsibility for the expense of the care and treatment of the mentally sick by the state, legislation to provide proper procedure for restoration of citizenship, conforming to the minimum standards of the American Psychiatric Association relative to the number of physicians at state hospitals and their salaries, provision of training programs in hospitals for attendants and affiliate student nurses, psychiatric training for young physicians, social work programs in hospitals, transportation of patients to state hospitals, an adequate code for the commitment and care of the criminally insane and other things of importance.

Information coming from such sources as police departments and county prosecuting attorneys, indicates that many of these things need to be done.

The Committee on Mental Health of the Missouri State Medical Association, after due consideration and consultation with practicing neuropsychiatrists in St.

Louis and Kansas City and in other parts of the state, looks with favor on the proposals made by the Missouri Association for Mental Hygiene and favors embarking on a program of study of all the laws relating to the care of the mentally ill in the State of Missouri with a view toward aiding any program looking toward their improvement.

The Committee on Mental Health recommends that the Missouri State Medical Association endorse the proposals for legislation made by the Missouri Association for Mental Hygiene, and embark on a systematic study of Missouri laws relating to the care and treatment of the mentally ill in order to be in a position to encourage changes in them which may be found desirable.

B. LANDIS ELLIOTT, Chairman,  
EMMETT F. HOCTOR,  
F. M. GROGAN,  
F. A. CARMICHAEL,  
RALF HANKS.

On motion, duly seconded, the report was accepted.

The report of the Committee on Maternal Welfare and Infant Care, Dr. Ralph R. Wilson, Kansas City, Chairman, follows:

#### REPORT OF THE COMMITTEE ON MATERNAL WELFARE AND INFANT CARE

The activities of the Committee on Maternal Welfare and Infant Care have been reduced greatly during the last several months. Various factors, none of which have arisen from lack of enthusiasm or interest on the part of the members of the Committee, contribute to this status:

National defense programs and interests have superseded the importance of the educational type of work carried on by this Committee.

The distribution of Federal funds has recently been made through channels outside the domain of this Committee's line of duty.

The consumption of time required for satisfactory working arrangements between Federal and state agencies has delayed the promotion of educational programs in this field. The Committee, however, has been able to establish quite satisfactory arrangements with the University of Chicago and the University of Iowa for accepting physicians, singly or in groups, for refresher courses. Several inquiries followed an announcement in THE JOURNAL to this effect, but none has registered thus far.

During the last year four requests have been made by the Kansas City Children's Bureau for speakers. These have been supplied from Kansas City physicians, all of whom have borne favorable reflection upon the Committee's suggestions.

One request has been made for showing "The Birth of a Baby." This was requested by an organization in the Seventh Council District. Although all the requirements by the Jackson County Medical Society were met satisfactorily, the municipal board of censors would not grant a permit.

The Committee has sustained its interest in the promotion of legislation for a Baby Health Law. The present sponsorship for the proposed legislation is highly endorsed.

The Committee has held two meetings during the last year, the use of telephone conferences having supplanted the need of extensive meetings that might otherwise be necessary. The first meeting was held in Excelsior Springs, September 13, in conjunction with the meeting of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons. The second meeting was held in St. Louis, February 15, at the time of the joint meeting of the Chicago Gynecological Society, the Kansas City Obstetrical and Gynecological Society and the St. Louis Gynecological Society.

The Committee is holding its annual luncheon in St. Louis, April 28. An interesting clinical program is arranged for this meeting. Dr. Samuel A. Cosgrove, Jersey City, New Jersey, Director of the Margaret Hague Maternity Hospital, is the Committee's guest for this luncheon. Dr. Cosgrove also will appear on the program before the General Meeting under the Committee's sponsorship. He will discuss the various factors that have contributed to the marked reduction in maternal mortality in the State of Missouri in the last ten years.

RALPH R. WILSON, Chairman,  
BUFORD G. HAMILTON,  
JOSEPH D. JAMES,  
E. LEE DORSETT,  
JOHN AULL,  
IRL B. KRAUSE,  
W. ROGER MOORE.

On motion, duly seconded, the report was accepted.

The report of the Committee on Industrial Health, Dr. E. C. Funsch, St. Louis, Chairman, follows:

### REPORT OF THE COMMITTEE ON INDUSTRIAL HEALTH

The Committee on Industrial Health has had a number of meetings with the St. Louis Health Division, county health authorities and the State Board of Health, one meeting held in Jefferson City. These organizations have the personnel and finances to carry on industrial health investigations and the nature of the meetings was discussion of these problems.

On several occasions, a representative of industry has called upon the Chairman for assistance with some industrial problem. Contact with the parent organization of the American Medical Association is being carried on by correspondence.

E. C. FUNSCH, Chairman,  
G. T. BLOOMER,  
H. I. SPECTOR,  
W. M. KINNEY,  
J. E. CASTLES.

On motion, duly seconded, the report was accepted.

The report of the Committee on Study of Medical Practice Laws, Dr. J. Milton Singleton, Kansas City, Chairman, follows:

### REPORT OF THE COMMITTEE ON STUDY OF MEDICAL PRACTICE LAWS

The Committee on Study of Medical Practice Laws collaborated with the Committee on Public Policy in an effort to have enacted by the General Assembly a bill relating to qualifications of applicants to practice medicine in Missouri by adding an additional requirement that applicants show satisfactory evidence of completion of premedical education consisting of a minimum of sixty semester hours of college credit in acceptable subjects from a reputable college or university approved by the State Board of Health. This bill was introduced in the House of Representatives and is known as House Bill No. 194.

J. MILTON SINGLETON, Chairman,  
LEE D. CADY,  
T. W. COTTON,  
E. D. JAMES,  
O. C. GEBHART,  
M. PINSON NEAL,  
E. L. SPENCE.

On motion, duly seconded, the report was accepted.

The report of the Committee on Medical Military Affairs, Dr. Robert Mueller, St. Louis, Missouri Chairman, Committee on Medical Preparedness, reporting, follows:

### REPORT OF THE COMMITTEE ON MEDICAL MILITARY AFFAIRS

This is a joint report of the Committee on Medical Preparedness of the American Medical Association and the Medical Military Affairs Committee of the Missouri State Medical Association. The work of these two committees is so closely affiliated that it could not be separated. Dr. William J. Shaw, Fayette, Chairman of the Medical Military Affairs Committee, has been called into the Service and for that reason this report is being made by the undersigned.

The phases of this work have been:

1. Preparation of Medical Questionnaire.
2. Organization of physicians for work on draft boards.
3. Medical Reserve Officers.
4. Civilian physicians.

The first work of importance was securing information as to the training, previous military experience and specialty of all the physicians in the State of Missouri, both those affiliated and those not affiliated with organized medicine. To date, of more than 5,400 physicians in the State of Missouri, fewer than 175 have failed to return their questionnaires. Most of these are either too old or physically incapacitated. This record is one of the finest in the United States.

Secondly, this Committee had a meeting with a representative of the Governor and its services were offered in the selection of medical personnel for the draft boards. This offer was rejected and other appointments were made which resulted in a chaotic condition throughout the state. The authorities then decided to ask the organized medical profession for its help and since that time we have attempted to undo the chaos which had been created. Due to the repeated changing of personnel on medical examination boards this has proved to be very burdensome at times. It is hoped, however, that with the creation of boards instead of individual examinations, much of this difficulty will be overcome.

Thirdly, a survey of all Medical Reserve Officers in Missouri was made. The point that was most stressed was the medical situation in the communities if Reserve Corps Officers were taken from those particular communities.

Fourthly, the status and availability of civilian physicians should an emergency arise requiring their services was studied.

The main idea and work of these committees have been to try, if possible, to prevent the mistakes that were made during the last war of leaving certain communities without adequate medical care. Recommendations have been made to the proper authorities not to take certain men in certain communities because the taking of these men would produce either a shortage or an entire lack of medical care.

The medical profession is to be congratulated on its response to the demands for national defense. It should be remembered that all of this work is being done without pay by the profession throughout the state and the expense of gathering the information for the medical questionnaires was borne by the State Association. This Committee has also helped in securing specialists for the Induction Board at Jefferson Barracks.

ROBERT MUELLER, Missouri Chairman,  
Committee on Medical Preparedness.

On motion, duly seconded, the report was accepted.

### Appointment of Committee on Nominations

The Speaker announced the appointment of the Committee on Nominations as follows:

Joseph C. Peden, St. Louis, Chairman  
F. G. Thompson, St. Joseph  
J. R. Bridges, Kahoka  
R. G. Cooper, St. Charles

W. L. Allee, Eldon  
C. J. Allen, Rich Hill  
C. Edgar Virden, Kansas City  
B. E. DeTar, Joplin  
H. G. Frame, Mountain Grove  
W. H. Barron, Fredericktown

On motion the House of Delegates recessed until 4:30 p. m.

### Monday, April 28, 1941—Afternoon Session

The adjourned session of the House of Delegates convened at 4:30 p. m., Monday, April 28, with Dr. Ralph E. Duncan, Kansas City, Speaker of the House, presiding.

The report of the Council, Dr. Curtis H. Lohr, St. Louis, Chairman, follows:

### REPORT OF THE COUNCIL

The Council of the Missouri State Medical Association met October 16 at the Muehlebach Hotel, Kansas City. Dr. Curtis H. Lohr, St. Louis, Chairman, presided. In attendance were Drs. A. S. Bristow, Princeton; H. B. Goodrich, Hannibal; Charles E. Fallet, DeSoto; William A. Bloom, Fayette; F. I. Wilson, Kansas City; H. L. Kerr, Crane; Eldon C. Bohrer, West Plains, and Curtis H. Lohr, St. Louis, Councilors; Cyrus E. Burford, St. Louis, President; R. B. Denny, Creve Coeur, President-Elect; E. H. Bartelsmeyer, Executive Secretary; Morris B. Simpson, Kansas City, Chairman, Committee on Public Policy, and R. M. James, Joplin, and Donald M. Dowell, Chillicothe, members of the Committee; Robert Mueller, St. Louis, State Chairman, Committee on Medical Preparedness; James E. Stowers, Kansas City, member, Committee on Medical Military Affairs, and James R. McVay, Kansas City, and F. K. Helsby, Kansas City, Executive Secretary, Jackson County Medical Society, guests.

The minutes of the meeting of the Council on May 1, 1940, were approved as published in *THE JOURNAL*, July 1940.

The Chairman reported that in accordance with the action of the Council on May 1, he had consulted the respective delegates representing the Fourth Councilor District and they unanimously had elected Dr. Charles E. Fallet, DeSoto, as Councilor of the Fourth District to fill the unexpired term of Dr. R. B. Denny, Creve Coeur, who resigned subsequent to his election as President-Elect.

The appointment of Dr. Charles E. Fallet, DeSoto, as a member of the General Committee on Arrangements for the St. Louis 1941 Annual Session was approved.

The President submitted the appointment of Dr. Robert Mueller, St. Louis, as the State Chairman of the Committee on Medical Preparedness, which was confirmed.

The Secretary presented the report of the Treasurer, Dr. R. L. Thompson, St. Louis, which indicated a cash balance of \$12,335.05 as of October 14, 1940. The report of the Treasurer pointed out that post office regulations applying to the mailing of *THE JOURNAL* require payment of dues which include subscription to *THE JOURNAL* and that the names of delinquent members would have to be removed from the mailing list until the dues were paid. The Council authorized the Treasurer and the Editor of *THE JOURNAL* to notify delinquent members accordingly.

The Secretary reported that several county societies had requested information as to who shall pay dues for members in the Medical Reserve Corps who are called for duty. The decision of the Council with reference to this same question as of 1918 was reviewed by reading an excerpt from the minutes of the Council of May 6, 1918, in Annual Session at Jefferson City. The 1918 minutes read as follows:

"The Committee was asked to rule on the question of who shall pay the state assessment for members of

county societies in the Medical Reserve Corps. The Committee decided it had no authority to rule on this question as it amounted to a suspension of the By-Law requiring annual payment of the state assessment, but recommended to the county societies that the societies pay out of the county society treasury the state assessment of their members in active service in the Medical Reserve Corps. Many societies have done this and many members of the Medical Reserve Corps have paid their county and state dues as usual. By corresponding with other state associations we have learned that county societies throughout the country are paying the state assessment of their members with few exceptions. It seems to the Committee that the burden of paying the state assessments would fall very lightly upon the individual societies but if the State Association undertook to bear the loss it would seriously embarrass the activities of the Association."

It was the opinion of the Council that the previous ruling should prevail in the present situation. It was agreed that county medical societies should consider each case on an individual basis and that if a member in active service in the Medical Reserve Corps was financially unable to pay his dues and the Society remitted his dues, the Council would remit the dues of the State Association upon the recommendation of the Society.

Dr. Robert Mueller, St. Louis, State Chairman of the Committee on Medical Preparedness, reported in detail the activity of his Committee. Each Councilor accepted the responsibility of acting as Chairman of the Committee on Medical Preparedness in his respective district.

Dr. Morris B. Simpson, Kansas City, Chairman of the Committee on Public Policy, discussed the activity of that Committee. It was decided to hold a joint meeting of the Councilors and presidents and secretaries of the component county medical societies at as early a date as might be deemed expedient, the President and the Chairman of the Council to call the meeting.

The Council was the guest of the Jackson County Medical Society for lunch.

### Meeting of December 22

The Council of the Missouri State Medical Association met in Jefferson City, December 22, following the meeting of presidents and secretaries of county medical societies. A quorum was present.

The Council approved joining with the St. Louis Medical Society in extending an invitation to the American Medical Association to hold its 1944 Session in St. Louis.

The budget for 1941 was approved as follows:

### BUDGET FOR 1941

Salaries—	
Office .....	\$ 8,750.00
JOURNAL .....	4,000.00
Printing of THE JOURNAL .....	7,100.00
Public Relations .....	3,300.00
Defense .....	1,000.00
Postage .....	800.00
Postgraduate Instruction .....	1,200.00
Printing and Stationery .....	700.00
Traveling Expenses of Executive Secretary .....	1,100.00
Telephone and Telegraph .....	600.00
Rent of Office and Light .....	1,100.00
Meetings: .....	4,000.00
Annual Session	
Council and Councilors' Expenses	
Committee Meetings and Conferences	
Delegates to A. M. A.	
General Expense and Miscellaneous .....	600.00
	<hr/>
	\$34,250.00

No further business was transacted.

### Meeting of March 30

A telephone conference meeting of the Council was held on Sunday, March 30, at 1:00 p. m. All Councilors participated. The topics discussed included pending legislation, certain phases of the Annual Session and other

important activities of the Association. It was decided to hold a meeting of the Council on Sunday evening, April 27, immediately preceding the Annual Session.

CURTIS H. LOHR, Chairman.

The minutes of the Council meeting of April 28, 1941, (page 259) were read

On motion, duly seconded, the report was adopted.

Dr. F. E. Butler, Salem, read the report of the Reference Committee on Miscellaneous Affairs.

## REPORT OF THE REFERENCE COMMITTEE ON MISCELLANEOUS AFFAIRS

The Reference Committee on Miscellaneous Affairs has considered the report of the Committee on Fractures and commend them for their work. We recommend that the report be adopted.

On motion, duly seconded, this report was adopted.

Dr. Jerome E. Cook, St. Louis, read the report of the Reference Committee on Medical Education and Public Welfare.

## REPORT OF THE REFERENCE COMMITTEE ON MEDICAL EDUCATION AND PUBLIC WELFARE

The Reference Committee on Medical Education and Public Welfare has considered the report of the Committee on Medical Economics. We believe that certain recommendations of that report in particular call for prompt consideration and action. The Association and its component units should, we think, take a more active interest in the economic changes which are taking place and, since they are best informed as to medical needs, should assume the task of formulating and guiding new plans. We, therefore, ask the delegates to commend the report of the Committee on Medical Economics and to adopt the following resolution in reference to certain specific recommendations of that report:

*Resolved*, That the House of Delegates commend the work of Group Hospital Service in St. Louis and Kansas City. That the House recommend that Group Hospital Service, Inc., develop a low cost plan in addition to its present schedule in order that the lowest income groups can be given the benefit of its service, particularly in the rural areas and smaller towns.

We further recommend that the Governor be asked to appoint a committee made up in equal parts of members of the medical profession, hospital group representatives and representatives of the public, to study plans for taking care of the medically indigent throughout the state as approved at the Cape Girardeau session.

We recommend that the Committee on Medical Economics present to the State Medical Association for consideration a state-wide plan for medical service and that a special committee be appointed to study and make recommendations as to the types, size and scope of any new hospitals which may be built in the state in the future.

We move the adoption of this report.

After discussion the report was adopted.

DR. JOSEPH C. PEDEN, St. Louis: The reason I am here at this particular moment is to present a resolution on behalf of the delegates from St. Louis. You will recall that last year at Joplin the Committee on Rural Medicine made a report recommending that something be done about the reluctance of young men to go into the country to practice. These statements were made, for instance:

Doctors in rural areas and residents in many small towns and communities are becoming increasingly concerned about the reluctance of present day graduates of medical schools to seek locations in small towns.

It is becoming quite evident that the young physician graduating from medical school at this time is not interested in

entering private practice in small towns where there are no hospital, laboratory or other diagnostic facilities.

This Committee has given considerable thought as to what might be done to attract young physicians of the medical profession to the smaller towns and rural communities. Counties have the authority, under an old statute, to vote bonds for county hospitals. There are a few counties that have erected such institutions. Such action, the Committee believes, would supply the necessary facilities to attract competent physicians. However, it is doubtful if the plan is feasible in many instances.

The Committee also discussed laboratory facilities for rural communities and felt that many sections are too far removed from medical centers and the state laboratory. It is the belief of the Committee that laboratory sub-stations might profitably be located in some sections of the state which are now too far removed from either private or state laboratory conveniences.

In behalf of the St. Louis delegates I desire to introduce the following resolution relative to this report of 1940:

WHEREAS, At the 1940 convention a Report of the Committee on Rural Medicine was referred to the Council for consideration, in view of the urgency of the problem of making rural and small town practice more attractive to the younger graduates in medicine, as brought forth in that report, be it

*Resolved*, That this House of Delegates respectfully submits to the Council the recommendation that the President be asked to appoint a special committee for developing concrete plans for carrying out the suggestions of said report in this regard; and that in formulating such plans this special committee be advised (1) to make direct contact with county medical societies and other agencies concerned with local health needs and, (2) to survey the economic measures which will be necessary for furthering such a program and the financial aids which can be enlisted toward that end.

On motion, duly seconded, the resolution was adopted.

Upon request, Dr. W. F. Francka, Hannibal, was substituted for Dr. J. R. Bridges, Kahoka, and Dr. C. F. Callihan, Willow Springs, for Dr. H. G. Frame, Mountain Grove, on the Nominating Committee.

DR. H. L. MANTZ, Kansas City: As a representative of the Missouri Tuberculosis Association, and at the request of the Committee on Mental Hygiene, I am introducing this resolution and move its adoption.

WHEREAS, It has come to the attention of the Missouri State Medical Association that certain measures of economy in the operation of the eleemosynary institutions in the state have been initiated by the Governor, and

WHEREAS, Apprehension has been expressed by some lest the present standards of care of the sick wards of this state be caused to decline; therefore be it

*Resolved*, That the Missouri State Medical Association expresses its sympathy with and approval of all proper measures looking toward more economical and efficient operation of the institutions of the state and respectfully requests that in the application of such measures great care be taken to preserve those standards of care of the sick which have been painstakingly built up through the last twenty years and which have made the state hospital system of Missouri compare favorably with any in the nation.

The resolution was adopted.

DR. JOSEPH A. HARDY, JR., St. Louis: I have been asked to place this resolution before the House of Delegates.

WHEREAS, There is now in effect a resolution of the Section on Ophthalmology of the American Medical Association declaring it to be unethical for any member of the American Medical Association to consult in any manner with an optometrist, and

WHEREAS, The American Committee on Optics and Visual Physiology has adopted a resolution recommending the rescinding of the above section, and

WHEREAS, There is a definite place for optometric practice and its standards are being raised, and

WHEREAS, The prohibition of such consultation is frequently not in the best interest of the patient, therefore be it

*Resolved*, That the House of Delegates of the Missouri State Medical Association record itself in favor of the rescinding of all legislation of the Section on Ophthalmology prohibiting consultation of its members with optometrists, and be it further

*Resolved*, That delegates from the Missouri State Medical Association to the American Medical Association be instructed to present and support a resolution requesting the Section on Ophthalmology to declare it not to be unethical for a member of the American Medical Association to consult with optometrists.

On motion, duly seconded, this resolution was referred to the Reference Committee on Resolutions.

Dr. E. P. Heller, Kansas City, introduced a resolution

concerning the attitude of the American Medical Association toward socio-economic experiments which was adopted at the 1938 Session (published in the minutes of that Session) and moved that Delegates to the American Medical Association be instructed to present the resolution to that body.

After discussion, the motion was lost.

DR. H. B. GOODRICH, Hannibal: Last Thursday the State Board of Health met in Jefferson City and passed a resolution which I am asked to read. I do not think it requires any action.

It was moved and carried at the regular meeting of the State Board of Health in Jefferson City, April 24, 1941, that it was not considered advisable to lower the standard of requirements for application for a license to practice medicine in Missouri, and that the Missouri State Medical Association be so notified by Dr. Goodrich at its next meeting; also, that the Medical Association be informed that the State Board of Health has no legal authority to issue a temporary license.

Invitations were extended the Association for its 1942 Annual Session by Kansas City and St. Joseph. Kansas City was selected for the 1942 Annual Session.

On motion, duly seconded, the House of Delegates adjourned.

### Wednesday, April 30, 1941—Afternoon Session

The House of Delegates convened at 4:00 p. m., April 30, with the President, Dr. C. E. Burford, St. Louis, presiding in the absence of the Speaker and the Vice Speaker of the House.

The Committee on Credentials reported a quorum present.

The minutes of the previous meetings, on motion, duly seconded, were approved.

### Nomination for President-Elect

Dr. F. T. H'Doubler, Springfield, nominated Dr. Homer L. Kerr, Crane, for President-Elect. The nomination was seconded by Dr. O. P. Hampton, Jr., St. Louis.

On motion, duly seconded and carried, the Secretary was instructed to cast the unanimous ballot of the House of Delegates for Dr. Homer L. Kerr, Crane, for President-Elect. The Secretary cast the unanimous ballot of the House for Dr. Homer L. Kerr, Crane, as President-Elect of the Missouri State Medical Association for the ensuing year and the President declared Dr. Kerr so elected.

Dr. Kerr was escorted to the platform by Drs. Otto W. Koch, St. Louis, and R. R. Farthing, Ozark.

DR. HOMER L. KERR, Crane: Mr. President, Gentlemen of the House of Delegates of the Missouri State Medical Association: You have honored me perhaps more than I could have accounted for. I would like to think of it as a gesture honoring all our men, especially in the southwestern part of the state, all my good friends of which I have quite a few. These men are in the front ranks carrying the banner, if we are important enough to have a banner in 1942. I thank you very much.

### Report of the Committee on Nominations

For Vice Presidents: Dr. Harry L. Jones, Kansas City; Dr. B. K. Stumberg, St. Charles; Dr. M. D. Overholser, Columbia.

For Delegates to the American Medical Association: For Delegate, Dr. Robert E. Schlueter, St. Louis; alternate, Dr. Clinton W. Lane, St. Louis. Delegate, Dr. Rex L. Diveley, Kansas City; alternate, Dr. C. A. W. Zimmermann, Cape Girardeau.

On motion, duly seconded, these officers were declared elected.

The Secretary reported the results of the election of Councilors as follow:

2nd District.....Dr. H. B. Goodrich, Hannibal  
4th District.....Dr. Curtis H. Lohr, St. Louis  
6th District.....Dr. A. J. Campbell, Sedalia  
8th District.....Dr. Wallis Smith, Springfield  
10th District.....Dr. E. J. Nienstedt, Sikeston

### Installation of Dr. R. B. Denny

Dr. R. B. Denny, Creve Coeur, was escorted to the platform by Drs. E. R. Brown, University City, and Otto W. Koch, St. Louis.

DR. R. B. DENNY, Creve Coeur: I feel it a great honor to be installed as President of this Association. I realize, however, that it means work and sacrifice, but I will try to do the best I can. I feel that my work will be pretty hard, following such able men as Dr. Burford and Dr. McVay, the last two Presidents, but I have the promise of each of them that they will help me and tell me of my mistakes. I will try to make it a good year and I hope you men will feel free at any time to make suggestions.

Dr. R. B. Denny, Creve Coeur, made the following appointments to committees:

Scientific Work: Ralph A. Kinsella, St. Louis; Dudley S. Conley, Columbia; Stanley P. Howard, Jefferson City; Ralph R. Coffey, Kansas City.

Postgraduate Course: G. D. Callaway, Springfield; Rex L. Diveley, Kansas City.

Public Policy: Morris B. Simpson, Kansas City; R. M. James, Joplin; Donald M. Dowell, Chillicothe.

Defense: M. L. Klinefelter, St. Louis; M. J. Owens, Kansas City.

Medical Education and Hospitals: Ross A. Woolsey, St. Louis; V. V. Wood, St. Louis.

Cancer: D. A. Robnett, Columbia; E. C. Ernst, St. Louis.

Medical Economics: Carl F. Vohs, St. Louis; W. F. Francka, Hannibal.

Mental Health: R. P. C. Wilson, Marshall; E. F. Hockett, Farmington.

Maternal Welfare and Infant Care: W. H. Breuer, St. James; Ralph R. Wilson, Kansas City; Irl B. Krause, Jefferson City; W. Roger Moore, St. Joseph.

Health and Public Instruction: A. R. McComas, Sturgeon; E. J. Schisler, St. Louis; D. A. Robnett, Columbia; A. J. Durant, Columbia.

Constitution and By-Laws: Robert Vinyard, Springfield; Otto W. Koch, St. Louis; Joseph C. Peden, St. Louis; G. T. Bloomer, St. Joseph.

Fractures: O. P. Hampton, Jr., St. Louis; J. P. Murphy, St. Louis; F. G. Pitkin, Kansas City; D. L. Yancey, Springfield.

Conservation of Eyesight: C. P. Dyer, St. Louis; John McLeod, Kansas City; George A. Hornback, Hannibal; G. J. Tygett, Cape Girardeau; C. R. Bruner, Columbia; C. S. Smith, Springfield.

Control of Venereal Disease: C. T. Ryland, Lexington; J. P. Henderson, Kansas City.

Industrial Health: R. G. Cooper, St. Charles.

Physical Therapy: A. J. Kotkis, St. Louis; C. A. W. Zimmermann, Cape Girardeau.

Medical Legal Affairs: James R. McVay, Kansas City. Tuberculosis: E. E. Glenn, Springfield; George B. Kettelkamp, Koch; R. H. Runde, Mt. Vernon.

Rural Medicine: H. A. Lowe, Springfield; T. W. Cotton, Van Buren; R. E. Breuer, Newburg.

Medical Military Affairs: H. B. Stauffer, Jefferson City; Charles D. Osborne, Kansas City; James E. Stowers, Kansas City; T. P. Brookes, St. Louis.

Adviser to Woman's Auxiliary: H. L. Mantz, Kansas City.

On motion, duly seconded, these appointments were approved.

Dr. J. H. Cochran, Cape Girardeau, Chairman, presented the report of the Reference Committee on Resolutions.

## REPORT OF THE REFERENCE COMMITTEE ON RESOLUTIONS

The resolution pertaining to the ophthalmologists holding consultations with optometrists has been reviewed by this committee. The committee was unable to hold a hearing where interested and informed members might advise it, and therefore, refers this controversial resolution to the Council for action.

On motion, duly seconded, the report was referred to the Council.

Dr. J. H. Cochran, Cape Girardeau, presented the following resolution:

WHEREAS, The present session of the Missouri State Medical Association has been one of the most successful in the history of the Association and has had the largest attendance, numbering more than 1,200, and

WHEREAS, The St. Louis Medical Society has entertained the Association so enjoyably and efficiently, therefore be it

Resolved, That the House of Delegates of the Missouri State Medical Association expresses grateful appreciation to the official host, the St. Louis Medical Society, the citizens and officials of the City of St. Louis and the management of the Jefferson Hotel.

On motion, duly seconded, the resolution was unanimously adopted.

DR. ROBERT E. SCHLUETER, St. Louis: I move that the Council be authorized to have prepared a bronze tablet or plaque, suitably and appropriately inscribed, in memory of Dr. E. J. Goodwin, to be placed in the headquarters of the Missouri State Medical Association.

The motion was duly seconded and carried unanimously.

Dr. O. P. Hampton, Jr., St. Louis, requested the unanimous consent of the House of Delegates to present a resolution, which was granted, and the following resolution was presented:

WHEREAS, The President and Congress of the United States have seen fit to institute a system of selective service and thereby aid the building up of defense of this nation, and

WHEREAS, The national defense program has resulted in the increased need of physicians in the Army and Navy, and

WHEREAS, All the surveys indicate a shortage of physicians in the United States to supply the military and civil needs, and

WHEREAS, Many selective boards have not seen fit to defer until graduation students of medicine or interns until completion of their training, and there is no existing legislation to provide for the same, therefore be it

Resolved, That the House of Delegates of the Missouri State Medical Association go on record as favoring the principle of and legislation of Congress to the effect that students of medicine be allowed to complete their education and subsequent reasonable intern training, and that present interns be allowed to complete a reasonable amount of intern training before being placed in service by the Selective Service Act, and be it further

Resolved, That premedical students should be allowed to complete their premedical and medical education without interruption so as not to interfere with the normal number of graduates of medicine in the years to come, be it further

Resolved, That a copy of this resolution be furnished to our senators and congressmen by the Secretary.

On motion, duly seconded, the resolution was adopted.

Dr. Robert E. Schlueter, St. Louis, moved that, pursuant to the suggestion of Father Alphonse M. Schwitalla, St. Louis, the House of Delegates express its appreciation to the officers and attorneys of the American Medical Association for the service they have rendered the organized profession during the recent trial of the American Medical Association.

The motion was seconded and carried unanimously.

DR. PHILIP S. LUEDDE, St. Louis: I ask the indulgence of the House of Delegates for a few minutes relative to legislation now pending, Bill No. 160, pertaining to the anti-fireworks law. The Committee on Conservation of Eyesight has backed this bill for six months. We have enlisted the aid of the St. Louis Society for the Prevention of Blindness and various lay organizations that have manifested some interest. Dr. Winfred L. Post, Joplin, Chairman of the Committee, requests that this matter be brought before the House of Delegates, asking the members to take this up with their societies and with lay organizations in order to bring enough pres-

sure to bear to secure the passage of this bill, House Bill No. 160, the anti-fireworks bill.

Upon motion, duly seconded, the Secretary was instructed to write a letter to Dr. R. Emmet Kane, St. Louis, expressing regret that he was unable to attend the Session because of illness and wishing him a speedy recovery.

On motion, duly seconded, the House of Delegates adjourned *sine die*.

## MEETING OF THE COUNCIL

Jefferson Hotel, St. Louis

Monday, April 28, 1941—First Session

The first meeting of the Council convened at a luncheon meeting at noon, April 28, 1941, the Chairman, Dr. Curtis H. Lohr, St. Louis, presiding.

Roll call showed the following Councilors and Officers present:

1st District.....	A. S. Bristow, Princeton
2nd District.....	H. B. Goodrich, Hannibal
3rd District.....	Curtis H. Lohr, St. Louis
4th District.....	C. E. Fallet, DeSoto
5th District.....	W. A. Bloom, Fayette
6th District.....	A. J. Campbell, Sedalia
7th District.....	F. I. Wilson, Kansas City
8th District.....	H. L. Kerr, Crane
9th District.....	E. C. Bohrer, West Plains
10th District.....	E. J. Nienstedt, Sikeston
President.....	C. E. Burford, St. Louis
President-Elect.....	R. B. Denny, Creve Coeur
Treasurer.....	R. L. Thompson, St. Louis
Executive Secretary..	E. H. Bartelsmeyer, St. Louis

On motion the minutes of the previous meeting were approved as published.

Dr. Curtis H. Lohr, St. Louis, Chairman, appointed an Auditing Committee as follows: Drs. A. S. Bristow, Princeton; H. L. Kerr, Crane; H. B. Goodrich, Hannibal. On motion the report of the Treasurer was referred to the Auditing Committee.

On motion, duly seconded, the report of the Executive Secretary was approved.

On motion, duly seconded, the report of the Committee on Defense was adopted.

An appropriation of \$50.00 for the Woman's Auxiliary previously advanced was approved.

The following candidates for Affiliate Fellowship in the American Medical Association were approved: Drs. Moses W. Hoge, St. Louis; E. C. Grim, Kirksville; C. B. Nichols, Auxvasse; Meyer Wiener, St. Louis; Wilbur L. Hollister, Corpus Christi, Texas (member Jackson County); Jesse T. Pittam, Kansas City; Edward A. Burkhardt, Kansas City; J. Wallace Beil, Kansas City.

At the request of Mr. G. Oscar Johnson, State Administrator of the National Youth Administration for Missouri, for a liaison agent between the Missouri State Medical Association and the National Youth Administration, Dr. Herbert L. Mantz, Kansas City, was appointed.

The Committee on Industrial Health presented a proposed program for industrial hygiene submitted by the State Board of Health for the State of Missouri as follows:

### Future Industrial Hygiene Program

An analysis of the industrial population in Missouri indicates that it is largely centralized in those areas already having full-time health services and, in the most concentrated areas, additional industrial hygiene engineering personnel. Consequently, fairly adequate personnel provision is already available in the central office and throughout the state to begin the development of a statewide program. Further, based on experience in St. Louis City and St. Louis County, a detailed,

workable plan for a local industrial hygiene service has been developed. The general plan of administration is as follows:

The program in each city, county or district will be unified with the general public health program. The local full-time medical officer will contact the plant operators and arrange for studies to be made in their establishments. The central office personnel will work jointly with the local engineer until such time as this collaboration is no longer required. Equipment will be furnished or loaned to the local units for quantitative determinations and technical and laboratory assistance provided upon request.

In addition to the program outlined, cooperative relationships have been established with the following state departments indirectly concerned with the health of the workers: Workman's Compensation Commission, Bureau of Mines, Unemployment Compensation Commission and Labor Department. The State Health Department has made and reported upon all investigations requested by the Labor Department.

The detailed services in each locality will indicate the following:

1. Self initiated and requested studies to determine the nature and extent of potential health problems in industry.
2. Quantitative studies to evaluate accurately the potential health hazards.
3. Procurement of accurate and complete reporting of morbidity among industrial employees.
4. Compilation and distribution of information to industries and other interested agencies.
5. Satisfactory control of the working environment where studies indicate health hazards exist.
6. Promotion of measures for the control of syphilis, tuberculosis and other communicable diseases among industrial workers.

The survey of industries will include the tabulation of welfare and medical data and potential health hazards in the plants together with the control devices used. Quantitative studies will be made where hazardous exposures are thought to exist. Confidential reports including recommendations will be submitted to the plants studied. Periodic follow-up surveys will be made to determine whether or not hazardous conditions have been eliminated and to check the effectiveness of the control devices installed.

After consideration the program was approved.

Dr. Llewellyn Sale, St. Louis, presented the following plan submitted by the Missouri branch of the National Committee for Service to Immigrant Physicians:

The plan contemplates placing a limited number of physicians in rural areas in which there is inadequate medical service at the present time. The number of physicians so admitted to practice would be determined by the medical society in conjunction with the State Board of Health. Between ten and twenty a year for Missouri seemed a number that could be properly so placed. The qualifications of these men would be determined by the National Committee. In addition, of course, the Missouri Association or State Board of Health or some representative designated for this purpose would review the qualifications and pass upon the eligibility of the candidate before his admission to examination. It is thought to place only men between the ages of 30 and 45 years, whose medical training is satisfactory, whose familiarity with the English language is adequate and who seem to be able to adjust themselves to new surroundings.

The following committee to consider the immigrant physician problem in accordance with the proposed plan was appointed: Dr. C. E. Burford, St. Louis; Dr. R. B. Denny, Creve Coeur; Mr. E. H. Bartelsmeyer, St. Louis.

Dr. Robert Mueller, St. Louis, Missouri Chairman of the Committee on Medical Preparedness, and Colonel W. L. Gist, Jefferson City, medical officer of the Mis-

souri Selective Service Commission, spoke on the many problems incident to selective service.

The Council tendered a vote of thanks to Dr. Mueller and Colonel Gist for their efficient work.

Judge Fred L. English, St. Louis, and Dr. Morris B. Simpson, Kansas City, discussed the various bills now pending in the General Assembly of Missouri.

Dr. Herbert L. Mantz, Kansas City, Adviser to the Woman's Auxiliary, reported on the activities of the Auxiliary during the last year.

On motion the Council adjourned.

### Wednesday, April 30, 1941—Second Meeting

The second meeting of the Council convened April 30 following the final meeting of the House of Delegates with Dr. Curtis H. Lohr, St. Louis, Chairman, presiding.

The report of the Auditing Committee was read and approved.

The election of officers for the year resulted as follows: Treasurer, Dr. R. L. Thompson, St. Louis; Executive Secretary, Mr. E. H. Bartelsmeyer, St. Louis; Editor, Dr. Walter Baumgarten, St. Louis; Assistant Editor, Helen Penn, St. Louis; Chairman of the Council, Dr. Curtis H. Lohr, St. Louis; Vice Chairman, Dr. W. A. Bloom, Fayette; Secretary of the Council, Mr. E. H. Bartelsmeyer, St. Louis.

The Committee on Publication was appointed as follows: Drs. Walter Baumgarten, St. Louis, Chairman; Richard B. Schutz, Kansas City; M. H. Shelby, Cape Girardeau; Robert C. Haynes, Marshall.

Dr. F. I. Wilson, Kansas City, was appointed Chairman of the General Committee on Arrangements, and Drs. W. A. Bloom, Fayette, and A. S. Bristow, Princeton, members.

On motion, duly seconded, the Chairman of the Committee on Scientific Work was authorized to invite ten or more guest speakers for the 1942 Annual Session.

On motion of Dr. H. B. Goodrich, Hannibal, duly seconded, the name of the Adair-Schuyler-Knox-Sullivan-Putnam County Medical Society was changed to Northeast Central County Medical Society.

On motion, duly seconded, Dr. Rexford L. Diveley, Kansas City, was appointed chairman of the Local Committee on Arrangements for the 1942 Annual Session.

The matter of the hearing of an appeal from the action of a component society which has been pending for some time was discussed and the date was left subject to the call of the Chairman of the Council.

Mr. E. H. Bartelsmeyer, St. Louis, reported on the death of Dr. E. J. Goodwin, St. Louis, on February 18. The Council recommended that a page of the minutes be set aside honoring the memory of Dr. Goodwin.

On motion the Council adjourned *sine die*.

### COMMITTEE ON MATERNAL WELFARE AND INFANT CARE

#### Luncheon Meeting

#### Monday, April 28, 1941—Jefferson Hotel

The annual meeting of the Committee on Maternal Welfare and Infant Care was held in Private Dining Room 1, Jefferson Hotel, St. Louis, at 12:00 noon, April 28, Dr. Ralph R. Wilson, Kansas City, Chairman, presiding.

Dr. Samuel A. Cosgrove, Jersey City, was a guest of the Committee and discussed maternal deaths reported at the meeting.

Dr. E. Lee Dorsett, St. Louis, showed a motion picture on "Podalic Version."

Dr. Paul F. Fletcher, St. Louis, showed a motion picture on "Cesarean Section."

### BANQUET IN HONOR OF PAST PRESIDENTS

The banquet in honor of Past Presidents was held in the Gold Room, Jefferson Hotel, St. Louis, at 7:00 p. m.

April 28, the President, Dr. C. E. Burford, St. Louis, presiding.

Dr. Joseph C. Peden, St. Louis, President of the St. Louis Medical Society, gave an "Address of Welcome."

Dr. Daniel L. Sexton, St. Louis, Chairman of the Local Committee on Arrangements, announced the various social activities of the Session.

Dr. James R. McVay, Kansas City, spoke on the merits of the Community Health League.

Father Alphonse M. Schwitalla, S.J., St. Louis, Dean of St. Louis University School of Medicine, gave a word of welcome from the two medical schools in St. Louis.

The Past Presidents of the Missouri State Medical Association were introduced.

Dr. Morris Fishbein, Chicago, Editor of *The Journal of the American Medical Association*, delivered an address on "American Medicine Prepares."

A President's Reception and dancing followed the banquet.

## MINUTES OF THE GENERAL MEETING

### Gold Room, Jefferson Hotel

#### Monday, April 28, 1941—Morning Session

The scientific sessions were held in the Gold Room of the Jefferson Hotel, St. Louis, the first convening at 10:00 a. m., as a dry clinic, Dr. Robert A. Moore, St. Louis, presiding as moderator.

Drs. William P. Glennon, Bruce D. Kenamore, L. D. Cassidy and Robert A. Moore, St. Louis, discussed "Peptic Ulcer."

Drs. John Zahorsky, Joseph C. Jaudon, Julius Rossen and Russell J. Blattner, St. Louis, discussed "What Shall We Feed This Baby?"

#### Monday, April 28, 1941—Afternoon Session

The general scientific sessions were held in the Gold Room of the Jefferson Hotel, St. Louis, the first convening at 2:30 p. m., April 28, with Dr. C. E. Burford, St. Louis, President, in the chair. Addresses were presented as follows:

Dr. R. G. Spurling, Louisville, "Painful Arm and Shoulder With Special Reference to the Problem of Scalenus Neurocirculatory Compression."

Dr. Robert W. Bartlett and Dr. Willard Bartlett, Jr., St. Louis, "Practical Lessons Learned From a Fifteen Year Mortality Study in Toxic Goiter."

Dr. John F. Hardesty, St. Louis, "Survey of Persons Receiving Blind Pensions in Missouri From 1923 to 1940."

Dr. Willard M. Allen, St. Louis, "Clinical Use of the Sex Hormones."

#### Tuesday, April 29, 1941—Morning Session

Dr. C. E. Burford, St. Louis, Address of the President, "The Ideals of Medical Practice."

Dr. R. B. Denny, Creve Coeur, Address of the President-Elect, "We Live to Serve and Not Serve to Live."

Dr. Russell L. Cecil, New York, "Treatment of Chronic Arthritis."

Dr. R. G. Spurling, Louisville, "Herniated Nucleus Pulposus."

Dr. Clyde L. Deming, New Haven, "Relation of Hypertension to Renal Disease."

Dr. Meyer Bodansky,\* Galveston, "The Use of Laboratory Data in Clinical Medicine."

Dr. Paul B. Magnuson, Chicago, "Differential Diagnosis of Conditions Causing Pain in the Lower Back."

Dr. Jean M. Stevenson, Cincinnati, "Surgical Care of Fresh Traumatic Wounds."

#### Tuesday, April 29, 1941—Noon Session

Round Table Discussion, Crystal Room, Jefferson Hotel.

Dr. Ralph A. Kinsella, St. Louis, presided.

Dr. Russell L. Cecil, New York, and Dr. Meyer Bodansky,\* Galveston, "Internal Medicine."

Dr. Jean M. Stevenson, Cincinnati, "Surgery."

Dr. Clyde L. Deming, New Haven, "Urology."

Dr. Paul B. Magnuson, Chicago, "Orthopedics."

#### Tuesday, April 29, 1941—Afternoon Session

Dr. Clyde L. Deming, New Haven, "Development of Benign Prostatic Overgrowth."

Dr. Meyer Bodansky,\* Galveston, "Fetal-Maternal Interdependence: Nutritional and Metabolic Factors."

Dr. Jean M. Stevenson, Cincinnati, "Local Isolation Treatment of Boils."

Dr. Paul B. Magnuson, Chicago, "Fractures on the Battle Field and the Roadside: How Do They Differ?"

Dr. Samuel A. Cosgrove, Jersey City, "Management of Abruptio Placentae."

Dr. Russell L. Cecil, New York, "Chemotherapy of Pneumonia."

#### Wednesday, April 30, 1941—Morning Session

Dr. Walter C. Alvarez, Rochester, "Puzzling Types of Abdominal Pain."

Dr. Lawrence S. Fallis, Detroit, "Regional Enteritis."

Dr. James Barrett Brown and Dr. Frank McDowell, St. Louis, "The Late Functional Results in the Skin Grafting of Burns."

Dr. A. E. Bennett, Omaha, "Modern Treatment of the Mentally Ill."

Dr. Willard M. Allen, St. Louis, "The Significance of Abnormal Vaginal Bleeding."

Dr. Hurley L. Motley, Columbia, "Simple Tests for the Quick Determination of Common Sedative Drugs With Particular Reference to the Barbiturates."

Dr. Harrison F. Flippin, Philadelphia, "Cardinal Principles of Sulfonamide Therapy."

#### Wednesday, April 30, 1941—Noon Session

Round Table Discussion, Crystal Room, Jefferson Hotel.

Dr. James E. Stowers, Kansas City, presided.

Dr. Walter C. Alvarez, Rochester, and Dr. Harrison F. Flippin, Philadelphia, "Internal Medicine."

Dr. Lawrence S. Fallis, Detroit, "Surgery."

Dr. A. E. Bennett, Omaha, "Neuropsychiatry."

Dr. Willard M. Allen, St. Louis, "Gynecology."

#### Wednesday, April 30, 1941—Afternoon Session

Dr. A. E. Bennett, Omaha, "Curare in Neuropsychiatry."

Dr. Harrison F. Flippin, Philadelphia, "Modern Control of Pneumonia."

Dr. Walter C. Alvarez, Rochester, "What Is the Matter With the Patient Who Is Always Tired?"

Dr. Lawrence S. Fallis, Detroit, "Diagnosis and Treatment of Common Anorectal Diseases."

\*Deceased.

## MISSOURI STATE MEDICAL ASSOCIATION REGISTRATION AT EIGHTY-FOURTH ANNUAL SESSION

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Allen, Hollis N., St. Louis  
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Louis  
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Bartlett, Willard, Jr., St.  
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Beasley, L. Kenneth, St.  
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Becke, W. G., St. Louis  
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Beisbarth, Carl C., St. Louis  
Benjamin, Durand, St. Louis  
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Bina, Albert F., St. Louis  
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Black, William D., St. Louis  
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Bohne, William R., St. Louis  
Bosse, Edwin H., St. Louis  
Bowdern, Edward H., St.  
Louis  
Bowerman, Harold H., St.  
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Bradley, Arthur H., St. Louis  
Bradley, John M., St. Louis  
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Bristow, Harry G., St. Louis

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Louis  
Brockelmann, Erich, St. Louis  
Brookes, Henry S., St. Louis  
Brookes, Theodore P., St.  
Louis  
Brooks, F. C., St. Louis  
Broun, Goronwy O., St. Louis  
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Brown, James M., St. Louis  
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Ferris, Joseph L., St. Louis  
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Fletcher, Paul F., St. Louis  
Forsen, James A., St. Louis  
Forti, John J., St. Louis  
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Foster, Leon, St. Louis  
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Gallagher, William J., St.  
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Glennon, William P., St.  
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Gray, Samuel H., St. Louis

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Louis  
Grindon, Joseph, Sr., St.  
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Gross, Julius H., St. Louis  
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Hampton, Stanley F., St.  
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Hanser, Theodore H., St.  
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Hardy, Joseph A., Jr., St.  
Louis  
Hardy, William F., St. Louis  
Harford, Carl G., St. Louis  
Harris, Downey L., St. Louis  
Harrison, Lee B., St. Louis  
Hartmann, Jacob A., St. Louis  
Hartnett, Leo J., St. Louis  
Heinrichs, Julius C., St. Louis  
Henderlite, John W., St.  
Louis  
Henske, Andrew C., St. Louis  
Hewitt, Walter R., St. Louis  
Hickey, Robert F., St. Louis  
Hines, Paul, Webster Groves  
Hirsch, William T., St. Louis  
Hoefler, Walter H. V., St.  
Louis  
Hoke, Wilbur J., St. Louis  
Holdenreid, William E., St.  
Louis  
Hooss, Albert, St. Louis  
Horner, John L., St. Louis  
Hosto, Leland E., St. Louis  
Hotz, John W., St. Louis  
Humphrey, J. Harrison, St.  
Louis  
Hutton, J. Lewis, St. Louis  
Hyndman, Charles E., St.  
Louis  
Jacobi, Franklin E., St. Louis  
James, William M., St. Louis  
Jaudon, Joseph C., Webster  
Groves  
Johnson, E. Horace, St. Louis  
Jones, Andrew B., St. Louis  
Jones, Otey S., St. Louis  
Jones, Vincent L., St. Louis  
Jordan, Walter R., St. Louis  
Jorstad, Louis H., St. Louis  
Jostes, Frederick A., St. Louis  
Kappel, Louis, St. Louis  
Katz, Samuel D., St. Louis  
Kaufman, Julius R., St. Louis  
Kaylor, Orville K., St. Louis  
Keim, John P., St. Louis  
Kelley, Robert W., St. Louis  
Kelly, Charles A., St. Louis  
Kettelkamp, George D., Koch  
Kieffer, Roland S., St. Louis  
Kinsella, Ralph A., St. Louis  
Kirchner, Walter C. G., St.  
Louis  
Kirkpatrick, Harry E., St.  
Louis  
Kleine, Hans L., St. Louis  
Kleinschmidt, Clinton, St.  
Louis  
Klemme, Roland M., St.  
Louis  
Klinefelter, M. L., St. Louis  
Kneal, Ellsworth, St. Louis  
Koening, George H., St. Louis  
Kohler, Eugene J., St. Louis  
Kohler, Louis H., St. Louis  
Kountz, William B., St. Louis  
Kouri, Martin F., St. Louis  
Kramer, Fred, St. Louis  
Kramolowsky, Helmuth H.,  
St. Louis  
Krause, G. Lynn, St. Louis  
Krebs, Frank J. V., St. Louis  
Kuhlmann, Frederick C. E.,  
St. Louis  
Landree, James C., St. Louis  
Lane, Clinton W., St. Louis  
Langan, William J., Jr., St.  
Louis  
Larimore, Joseph W., St.  
Louis

Leavy, Charles A., St. Louis  
Leighton, William E., St.  
Louis  
Lembeck, Joseph A., St. Louis  
Levey, Simon A., St. Louis  
Leydig, Stanley M., St. Louis  
Link, Joseph J., St. Louis  
Loeb, Virgil, St. Louis  
Lohr, Curtis H., St. Louis  
Lowenstein, Paul S., St. Louis  
Luedde, Philip S., St. Louis  
Luedde, William H., St. Louis  
Lund, Herluf G., St. Louis  
Luten, Drew W., St. Louis  
Lyman, Harry W., St. Louis  
McCarroll, Henry R., St.  
Louis  
McDonald, George J., St.  
Louis  
McIntyre, W. Kress, St. Louis  
McMahon, Alphonse, St.  
Louis  
McMahon, Bernard J., St.  
Louis  
McNalley, Frank P., St. Louis  
MacDonald, John W., St.  
Louis  
Macko, Joseph R., St. Louis  
Macnish, James M., St. Louis  
Martin, Thomas M., St. Louis  
Mason, Roy E., St. Louis  
Mastin, Edward V., St. Louis  
Max, Clarence O. C., St. Louis  
Max, Paul F., St. Louis  
Maxwell, Richard W., St.  
Louis  
Meinberg, William H., Jr.,  
St. Louis  
Meisenbach, A. Edward, St.  
Louis  
Meredith, Joseph J., St. Louis  
Meyer, Curtis A., St. Louis  
Meyer, Harry H., St. Louis  
Meyer, Herman M., St. Louis  
Michael, Vernon E., St. Louis  
Miller, Charles W., St. Louis  
Miller, Dan T., St. Louis  
Milligan, Roy H., St. Louis  
Moeller, Carl E., St. Louis  
Moore, Neil S., St. Louis  
Moore, Walter L., St. Louis  
Morfit, John C., St. Louis  
Morse, Frank L., St. Louis  
Moskopp, Peter G., St. Louis  
Mountjoy, Grace S., St. Louis  
Mountjoy, Philip S., St. Louis  
Mudd, James L., St. Louis  
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Muehrer, Raymond O., St.  
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Munsch, Augustin P., St.  
Louis  
Munsch, Girard A., St. Louis  
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Murphy, John Patrick, Jr.,  
St. Louis  
Murphy, Paul, Koch  
Myer, Max W., St. Louis  
Myers, E. Lee, St. Louis  
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Neilson, Charles H., St. Louis  
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Nemours, Paul R., Clayton  
Neuhoff, Fritz, St. Louis  
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Nye, Robert S., St. Louis  
O'Keefe, Charles D., St. Louis  
Orenstein, Joseph M., St.  
Louis  
Patton, John F., St. Louis  
Peden, Joseph C., St. Louis  
Pelz, Mort D., St. Louis  
Pernoud, Flavius G., St.  
Louis  
Pfeifer, Oliver C., St. Louis  
Phelan, Emma, St. Louis  
Pickrell, Claude D., St. Louis  
Ploehn, Emma, St. Louis  
Portuondo, Bonaventura C.,  
St. Louis  
Post, M. Hayward, St. Louis  
Powell, Carl A., St. Louis  
Powell, Rudolph V., St. Louis  
Powers, Pierce W., St. Louis  
Pranger, Sylvester H., St.  
Louis  
Probststein, Jacob, St. Louis  
Proetz, Arthur W., St. Louis  
Pruett, Burchard S., St. Louis  
Pulliam, Madison J., St. Louis

Quinn, Abram T., St. Louis  
Rainey, Warren R., St. Louis  
Rassieur, Louis, St. Louis  
Ready, James H., St. Louis  
Reim, Hugo, St. Louis  
Rendleman, George F., St. Louis  
Reuter, Louis A., St. Louis  
Rice, Earl R., St. Louis  
Ries, Douglas A., St. Louis  
Ringo, Henry J., St. Louis  
Riordan, Lawrence M., St. Louis  
Ritchie, Frances R., St. Louis  
Roblee, Melvin A., St. Louis  
Roche, Maurice B., St. Louis  
Rose, Dalton K., St. Louis  
Rosen, Charles S., St. Louis  
Rosenfeld, Henry, St. Louis  
Rosenfeld, Herman J., St. Louis  
Rossen, Julius A., St. Louis  
Rotteck, Julius, St. Louis  
Ruddell, George W., St. Louis  
Rusk, Howard A., St. Louis  
Sale, Llewellyn, St. Louis  
Sanders, Theodore E., St. Louis  
Sanford, Joseph H., St. Louis  
Sante, LeRoy, St. Louis  
Sauer, Dean, St. Louis  
Sauer, William E., St. Louis  
Schaaf, Katherine M., St. Louis  
Schaffer, Joseph C., St. Louis  
Scheff, Harold, St. Louis  
Scherer, Phil H., St. Louis  
Scherman, Victor E., St. Louis  
Schery, Charles W., St. Louis  
Schisler, Edwin J., St. Louis  
Schlenker, Lawrence, St. Louis  
Schlossstein, Adolph G., St. Louis  
Schluer, Elmer P., St. Louis  
Schlueter, Newell W., St. Louis  
Schlueter, Robert E., St. Louis  
Schneider, Nicholas A., St. Louis  
Schnoebelen, Paul C., St. Louis  
Scholz, Roy P., St. Louis  
Schuchat, W. Louis, St. Louis  
Schuck, Philip, St. Louis  
Schwartzman, Bernard, St. Louis  
Scott, Wendell G., St. Louis  
Seibel, Marshall G., St. Louis  
Senturia, Ben D., St. Louis  
Senturia, Hyman R., St. Louis  
Sevin, Omar R., St. Louis  
Sewing, Arthur H., St. Louis  
Sexton, Daniel L., St. Louis  
Sexton, Elmer E., St. Louis  
Shahan, William E., St. Louis  
Sherwin, Charles F., St. Louis  
Shreffler, Algine R., St. Louis  
Shutt, Cleveland H., St. Louis  
Signorelli, Andrew J., St. Louis  
Simon, Jerome I., St. Louis  
Smith, Carroll, St. Louis  
Smith, Dudley R., St. Louis  
Smith, John R., St. Louis  
Smith, Oda O., St. Louis  
Smith, R. M., St. Louis  
Snyder, E. N., St. Louis  
Soper, Horace W., St. Louis  
Soule, Samuel D., St. Louis  
Spain, Kate C., St. Louis  
Spector, Hyman I., St. Louis  
Spivy, Raymond M., St. Louis  
Stecker, George, St. Louis  
Steiner, Albert S., St. Louis  
Stewart, Floyd, St. Louis  
Stindel, Charles E., St. Louis  
Stockwell, Benj. E., St. Louis  
Stolar, Jacob, St. Louis  
Stone, Charles A., St. Louis  
Strauss, Arthur E., St. Louis  
Striegel, Bernard F., St. Louis  
Stroud, C. Malone, St. Louis  
Sullivan, Clement J., St. Louis  
Sunderman, Raymond C., St. Louis

Susanka, William D., St. Louis  
Tainter, Frank J., St. Louis  
Tabbott, Hudson, St. Louis  
Taussig, Frederick J., St. Louis  
Tess, Melvin J. H., St. Louis  
Thompson, John W., St. Louis  
Thompson, Lawrence D., St. Louis  
Thompson, Ralph L., St. Louis  
Thym, Henry P., St. Louis  
Titterington, Paul F., St. Louis  
Tjoflat, Oliver E., St. Louis  
Tobias, Norman, St. Louis  
Trigg, Joseph F., St. Louis  
Trigg, Joseph M., St. Louis  
Twedell, Donald L., St. Louis  
Uhlemeyer, Henry A., St. Louis  
Unterberg, Hillel, St. Louis  
Vezeau, Stephen, St. Louis  
Vitt, Alvin E., St. Louis  
Vogel, Eugene A., St. Louis  
Vogt, William H., St. Louis  
Vohs, Carl F., St. Louis  
Walton, Franklin E., St. Louis  
Warner, Robert G., St. Louis  
Webb, Lewis M., St. Louis  
Webb, Marion A., St. Louis  
Webb, Paul K., St. Louis  
Weber, Sol, St. Louis  
Weiss, Matthew W., St. Louis  
Weiss, Richard S., St. Louis  
Weiss, William, St. Louis  
Wentzel, Louis R., St. Louis  
Werner, August A., St. Louis  
White, Orville O., St. Louis  
Wiatt, William S., St. Louis  
Wilcox, Claude V., St. Louis  
Wilhelmi, Otto J., St. Louis  
Will, Leo A., St. Louis  
Wood, V. V., St. Louis  
Wood, William G., St. Louis  
Woodruff, Frederick E., St. Louis  
Woolsey, Ross A., St. Louis  
Zahorsky, John, St. Louis  
Zahorsky, Theodore S., St. Louis  
Zelnert, Oliver B., St. Louis  
Zeitler, William T., St. Louis  
Ziegelmeyer, John S., St. Louis  
Zingale, Frank G., St. Louis  
Zink, Oscar C., St. Louis  
Zwart, Claude H., St. Louis

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Brandt, Benj., Foristell  
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Brown, Thomas K., St. Louis  
Brown, William S., St. Louis  
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Denny, Robert B., Creve Coeur  
Diamond, Jerome, St. Louis  
Drews, Leslie C., St. Louis  
Duckworth, William H., St. Clair  
Dyer, Clyde P., Webster Groves  
Dyer, John H., Warrenton  
Ecker, Decider, Pacific Eyermann, H. Walter, Warrenton  
Fallet, Charles E., DeSoto

Finley, Freeman L., St. Louis  
Foster, Robert L., St. Louis  
Gage, Helen L. B., Webster Groves  
Gilliland, Charles E., St. Louis  
Gitt, Joseph G., St. Louis  
Goodrich, Harold A., Webster Groves  
Gossow, August A., St. Charles  
Hageman, Paul O., St. Louis  
Hampton, Oscar P., Jr., St. Louis  
Hardy, Guerdon, St. Louis  
Harris, Harold S., Troy  
Hayward, John D., Clayton  
Hicks, Edward A., Troy  
Hobbs, John E., St. Louis  
Hughes, Clarence O., Ferguson  
Huntley, Henry C., Elsberry  
Irick, Carl C., Webster Groves  
Jacobs, Gustave E., St. Louis  
Jansen, Richard W., Manchester  
Jenkins, Joseph M., St. Charles  
Jensen, Julius, St. Louis  
Johnson, Grover C., Marthasville  
Johnson, Roy, Ferguson  
Keeling, Forrest V., Elsberry  
Kemp, Thomas J., Clayton  
Kenner, Edwin B., Wentzville  
Koch, Otto W., Ballwin  
Leslie, Charles H., Kirkwood  
Loving, B. Rush, Ballwin  
McCaughan, John M., St. Louis  
McLean, Royal C., Kirkwood  
McLoon, Mary A., St. Louis  
McShane, Quentin W., St. Louis  
Magidson, Joseph, St. Louis  
Mankopf, Bert E., Washington  
Marcus, Morris D., St. Louis  
Mays, Frank G., Washington  
Moore, Harry G., St. Louis  
Moore, William E., Normandy  
Morrison, Marriott T., Kimmswick  
Neubeiser, Ben L., St. Charles  
Neunlist, Percy C., Old Monroe  
Passanante, Bartholomew M., Clayton  
Penn, Robert M., Silex  
Pickel, John W., Barnhart  
Pritchard, Joseph A., Overland  
Richtarsic, Stephen R., St. Louis  
Rutledge, John F., Crystal City  
Sanders, Clifford E., Richmond Heights  
Schmidt, Edmund M., St. Louis  
Schmidt, Herbert H., Marthasville  
Schudde, Otto N., St. Louis  
Schulz, Arthur P. E., St. Charles  
Short, Ulysses S., St. Louis  
Smith, William A., Webster Groves  
Spitz, Milton A., Clayton  
Stein, Harry J., St. Louis  
Steiner, Alexander J., LeMay  
Sterling, John A., Maplewood  
Stern, Franz, Clayton  
Stuebner, Roland W., St. Louis  
Sutter, Richard A., St. Louis  
Teiber, Frederick W., St. Louis  
Thurmon, Josiah D., St. Louis  
Townsend, James A., Eureka  
Tureen, Louis L., St. Louis  
Usher, Thomas R., Maplewood  
Vitale, Nicholas S., St. Louis  
Votaw, Robert E., St. Louis  
Wall, Albert, St. Louis  
Waters, E. B., Kirkwood  
Wepprich, Michael S., Union

Westrup, Arthur W., Webster Groves  
Westrup, Ellsworth A., Webster Groves  
Whitener, Paul R., Overland  
Woeger, Jacob G., Whiteside  
Wyatt, Louis C., Kirkwood  
Yoskit, Harry, Festus  
Zeitler, Walter A., Jennings

#### Fifth Councilor District—53

Adams, C. Frederick, Jefferson City  
Alford, Redman L., Vandalia  
Allee, James W., Eldon  
Allee, Warren L., Eldon  
Andersen, Elmer J. T., Montgomery City  
Barden, Frank W., Centralia  
Baskett, Edgar D., Columbia  
Blasko, John J., Fulton  
Bloom, William A., Fayette  
Brashear, Howard C., Mexico  
Bricker, Eugene M., Columbia  
Brown, William B., Columbia  
Bruner, Claude R., Columbia  
Burke, J. P., Jr., California  
Conley, Dudley S., Columbia  
Cooper, Maurice E., Columbia  
Crews, Robert N., Fulton  
Crouch, Richard L., Columbia  
Delaney, Joseph H., Columbia  
Denzer, William O., Columbia  
Dietrich, Karl D., Columbia  
Dorris, Richard P., Jefferson City  
Gillham, Frank W., Jefferson City  
Griffin, Fred, Mexico  
Gunn, Aubrey J., Versailles  
Harrison, J. Frank, Mexico  
Highsmith, L. S., Columbia  
Howard, Stanley P., Jefferson City  
Jolley, J. Frank, Mexico  
Kelly, Thomas J., Jefferson City  
Kitchen, W. B., Glasgow  
Krause, Irl B., Jefferson City  
Leech, Maurice P., Fayette  
LeMone, David V., Columbia  
McComas, Arthur R., Sturgeon  
Meredith, Arnold L., Prairie Home  
Motley, Hurley L., Columbia  
Neal, M. Pinson, Columbia  
Nifong, Frank G., Columbia  
Overholser, Milton D., Columbia  
Robnett, Dudley A., Columbia  
Stauffer, Harry B., Jefferson City  
Stewart, James, Jefferson City  
Stewart, William J., Columbia  
Summers, Joseph S., Jefferson City  
Sweets, Henry H., Jr., Columbia  
Tate, Prentiss S., Fulton  
Tincher, Joseph C., Boonville  
van Ravenswaay, A. C. H., Boonville  
Washburn, J. Loren, Versailles  
Wessling, Frederick J., Hermann  
Young, H. McClure, Columbia  
Ziegler, Newell R., Columbia

#### Sixth Councilor District—27

Allen, Claude J., Rich Hill  
Campbell, A. J., Sedalia  
Cremer, William J., Nevada  
Davis, C. B., II, Nevada  
Dawson, John W., Eldorado Springs  
Dyer, David P., Sedalia  
Ellis, Coburn, Sweet Springs  
Fonda, James W., Jefferson Barracks

Hall, Oscar B., Warrensburg  
Hansen, Arthur L., Appleton  
City  
Harwood, Samuel R., Potosi  
Haynes, Robert C., Marshall  
Johnston, Elza L., Concordia  
Kammer, Stephen, Higgins-  
ville  
Kennedy, R. W., Marshall  
Long, David S., Harrison-  
ville  
McBurney, C. A., Slater  
Osborne, Charles D., Sedalia  
Potter, Reese, Nevada  
Ryland, C. T., Lexington  
Sharp, William L., St. Louis  
Shelton, Prior, Kansas City  
Smith, Rollin H., Rich Hill  
Trader, Charles B., Sedalia  
Walton, Josiah H., St. Louis  
Wensley, John E., Harrison-  
ville  
Wray, Rolla B., Nevada

#### Seventh Councilor District —16

Asher, Arthur G., Kansas  
City  
Aull, John, Kansas City  
Beal, Homer A., Kansas City  
Bell, J. Vardiman, Kansas  
City  
Bills, Marvin L., Kansas City  
Buckingham, W. W., Kansas  
City  
Capell, Clarence S., Kansas  
City  
Chambers, James Q., Jr.,  
Kansas City  
Coffey, Ralph R., Kansas City  
Comboy, Lawrence J., Inde-  
pendence  
Danglade, James H., Kansas  
City  
Dickson, Frank D., Kansas  
City  
Diveley, Rex L., Kansas City  
Duncan, Ralph E., Kansas  
City  
Elliott, B. Landis, Kansas  
City  
Erni, Harry E., Kansas City  
Frick, John P., Kansas City  
Gilkey, Harry M., Kansas  
City  
Gist, William L., Jefferson  
City  
Goldman, Max, Kansas City  
Haynes, Lee, Kansas City  
Heller, Edward P., Kansas  
City  
Helsby, F. K., Kansas City  
Helwig, Ferdinand C., Kan-  
sas City  
Henderson, James P., Kansas  
City  
Hunt, Claude J., Kansas City  
Jennett, J. Harvey, Kansas  
City  
Lamar, Frederick C., Kansas  
City  
Leitch, Cecil G., Kansas City  
McAlester, A. W., Jr., Kansas  
City  
McCallum, Francis M., Kan-  
sas City  
McLeod, John, Kansas City  
McVay, James R., Kansas  
City  
Mantz, Herbert L., Kansas  
City  
Parsons, Eugene O., Kansas  
City  
Polsky, Morris, Kansas City  
Robinson, G. Wilse, Jr., Kan-  
sas City  
Robinson, G. Wilse, Sr., Kan-  
sas City  
Shapiro, Lazare M., Kansas  
City  
Simpson, Morris B., Kansas  
City  
Smith, Arthur B., Kansas  
City  
Soderberg, N. B., Kansas City  
Stowers, James E., Kansas  
City  
Virden, C. Edgar, Kansas  
City  
Wilson, Fernando I., Kansas  
City

Wilson, Ralph R., Kansas  
City

#### Eighth Councilor District —10

Beers, Ellsworth G., Seymour  
Blanke, Otto T., Joplin  
Burney, Wallace S., Miller  
Clark, Samuel M., Halltown  
Cline, Edward W., Monett  
Coffelt, Kenneth C., Spring-  
field  
Cole, Paul F., Springfield  
DeTar, Burleigh E., Joplin  
Dumbauld, Bunn A., Webb  
City  
Dwyer, Thomas L., Mount  
Vernon  
Farthing, Robert R., Ozark  
Glenn, Elmer E., Springfield  
Glover, Kenneth, Mount Ver-  
non  
Hargrove, Fred T., Monett  
Harrell, R. E., Buffalo  
H'Doubler, Francis T.,  
Springfield  
Hoover, H. Lee, Springfield  
Horton, James D., Spring-  
field  
James, Robert M., Joplin  
Johnston, Joseph L., Spring-  
field  
Kerr, Homer L., Crane  
Kinney, William M., Joplin  
Lowe, Horace A., Springfield  
Lyons, L. Mason, Pierce City  
Maddox, John D., Joplin  
Maddux, William P., Fulton  
Meinershagen, Charles W.,  
Webb City  
Poor, Carl W., Joplin  
Powell, George M., Spring-  
field  
Reid, Charles T., Joplin  
Runde, R. H., Mount Vernon  
Sale, Onal A., Neosho  
Sewell, Walter S., Springfield  
Smith, Wallis, Springfield  
Taylor, William E., Spring-  
field  
Upshaw, Paul O., Springfield  
West, William M., Monett  
Williams, John W., Spring-  
field  
Wood, George H., Carthage  
Yancey, Daniel L., Spring-  
field

#### Ninth Councilor District —15

Bohrer, Eldon C., West Plains  
Breuer, Robert E., Newburg  
Breuer, William H., St. James  
Butler, Fred E., Salem  
Callahan, C. F., Willow  
Springs  
Cotton, T. W., Van Buren  
Davis, Harry H., Rolla  
Drake, Avery A., Rolla  
Frame, Homer G., Mountain  
Grove  
Horne, Albert H., Rolla  
McComb, James A., Lebanon  
McFarland, A. Sidney, Rolla  
Mallette, Cyrus, Crocker  
Oliver, Evertt A., Richland  
Stricker, Emil A., St. James

#### Tenth Councilor District —22

Appleberry, Charles H., Flat  
River  
Appleberry, Dailey, River  
Mines  
Baldwin, Paul, Kennett  
Barnes, Asa, Jefferson City  
Barron, W. Harry, Frederick-  
town  
Bugg, Andrew F., Ellington  
Cain, Charles F., Caruthers-  
ville  
Cochran, J. Howard, Cape  
Girardeau  
Estes, Albert M., Jackson  
Graves, G. Tivis, Farmington  
Hawkins, N. William, Bonne  
Terre  
Higdon, Edward E., Freder-  
icktown  
Lanning, Richard C., Ste.  
Genevieve  
Mitchell, Samuel E., Malden

Nienstedt, Elam J., Sikeston  
Sample, George A., Chaffee  
Smith, David E., Bonne Terre  
Spence, Albert L., Kennett  
Taylor, Van W., Bonne Terre  
Tygett, Glenn J., Cape Girar-  
deau  
Waddle, Theodore L.,  
Waynesville  
Zimmermann, Carl A. W.,  
Cape Girardeau

#### Guest Speakers—13

Allen, Willard M., St. Louis  
Alvarez, Walter C., Roches-  
ter, Minn.  
Bennett, A. E., Omaha, Nebr.  
\*Bodansky, Meyer, Galves-  
ton, Texas  
Cecil, Russell L., New York  
Cosgrove, Samuel A., Jersey  
City, N. J.  
Deming, Clyde L., New  
Haven, Conn.  
Fallis, Lawrence S., Detroit  
Fishbein, Morris, Chicago  
Flippin, Harrison F., Phila-  
delphia  
Magnuson, Paul B., Chicago  
Spurling, R. G., Louisville  
Stevenson, Jean M., Cincin-  
nati

#### Visiting Doctors of Medi- cine, Interns and Stu- dents—260

Allen, Lee G., Litchfield, Ill.  
Armstrong, Guy L., Taylor-  
ville, Ill.  
Asbury, Ernst C., New Ba-  
den, Ill.  
Azar, Philip, St. Louis  
Baird, Haynes, St. Louis  
Balletta, F., St. Louis  
Bangeman, John O., Kansas  
City  
Barnett, Ernest, St. Louis  
Barnett, C. H., Kansas City  
Beam, Robert, St. Louis  
Beatty, John H., St. Louis  
Beck, Charles A., St. Louis  
Beckette, Edmund S., Jr.,  
E. St. Louis  
Behan, Larry, St. Louis  
Berry, Roy C., Livingston,  
Ill.  
Bettonville, P. J., Richmond  
Heights  
Blattner, Russell J., St. Louis  
Bley, Robert E., Jr., Bunker  
Hill, Ill.  
Bohnelt, Earl, St. Louis  
Bramwell, Donald, St. Louis  
Brand, R., St. Louis  
Broune, Freeman, Kirkwood  
Brown, Adrian J., Kansas  
City, Kan.  
Buckner, Robert C., St. Louis  
Bundy, William, Koch  
Bung, F. M., St. Louis  
Burford, W. M., St. Louis  
Bush, Robert, St. Louis  
Callaway, Claude P., St.  
Louis  
Canaday, Robert N., Duplo, Ill.  
Canaga, Bruce L., Jr., St.  
Louis  
Carley, W. A., St. Louis  
Carpenter, L. C., Columbia  
Casey, Edwin J., St. Louis  
Chalkley, Judson, St. Louis  
Chiampi, Xavier J., St. Louis  
Christensen, J. J., St. Louis  
Clapp, R. W., St. Louis  
Clark, C. Lawrence, St. Louis  
Clark, Richard G., St. Louis  
Coffaratti, Dorius J., St. Louis  
Conlin, Gerald J., Jr., St.  
Louis  
Conti, James P., St. Louis  
Curtis, Clayton, St. Louis  
Dallas, Hugh G., Jefferson  
City  
Daman, George A., St. Louis  
Davis, William J., St. Louis  
Dean, James S., St. Louis  
De Filippis, Ralph, St. Louis  
Devilbiss, Edgar F., Kansas  
City  
Dierker, LeRov, St. Louis  
Dillon, John B., St. Louis  
\*Deceased.

Dills, Joseph N., St. Louis  
Dollean, Henry A., St. Louis  
Domingney, Rafael H., St.  
Louis  
Donley, Clifford L., St. Louis  
Donley, Robert S., Jr., St.  
Louis  
Dushesman, F. P., St. Louis  
Dunn, E. H., St. Louis  
Eck, Birkle, St. Louis  
Eidelman, Jack R., St. Louis  
Ellis, Calvin C., St. Louis  
Ellis, Sam T., Jr., St. Louis  
English, Milton, St. Louis  
Eto, Jackson K., St. Louis  
Eytinge, E. J., St. Louis  
Feldman, David, St. Louis  
Ferguson, Wilson J., St. Louis  
Firminger, Harlan I., St.  
Louis  
Foote, Burton A., St. Louis  
Ford, Walter L., St. Louis  
Foster, Ray T., St. Louis  
Freitag, Otto W., St. Louis  
Frerking, H. W., St. Louis  
Friedman, Alvin B., St. Louis  
Friedman, Bernard, Koch  
Fritsch, Killian F., St. Louis  
Gambrel, Frank, St. Louis  
Giannini, Albert P., St. Louis  
Gibbel, Melvin, St. Louis  
Gilbert, Charles S., St. Louis  
Glaser, Joseph, St. Louis  
Glynn, S. Robert, Belleville,  
N. J.  
Goodhue, William W., St.  
Louis  
Graul, Walter, St. Louis  
Green, Ray E., St. Louis  
Greene, C. W., Columbia  
Grieco, S. C., St. Louis  
Grosby, Herman G., St. Louis  
Gundie, Sigmund, St. Louis  
Hagg, Oliver J., St. Louis  
Hall, Robert A., St. Louis  
Hamilton, Eugene G., St.  
Louis  
Hanover, Bernard, St. Louis  
Hanth, I., St. Louis  
Harding, Herbert C., St.  
Louis  
Harmon, Thomas F., Spring-  
field, Ill.  
Harris, Charles G., Festus  
Hartnett, D. C., St. Louis  
Hawley, James, St. Louis  
Hennan, B. B., St. Louis  
Herdener, Russell L., St.  
Louis  
Herrmann, Arnold J., St.  
Louis  
Heyer, Oscar C., Kansas City  
Hildebrand, L. E., St. Louis  
Horpole, G. T., St. Louis  
Howell, J. D., St. Louis  
Huber, T. E., St. Louis  
Huebner, R. J., St. Louis  
Hugen, Raymond A., St.  
Louis  
Hunter, Archibald H., Staun-  
ton, Ill.  
Jackson, Daniel, St. Louis  
Jacob, R., St. Louis  
Jenkins, Lillian, St. Louis  
Johnston, Rich, Clayton  
Jones, Asa C., St. Louis  
Jones, Wendell, St. Louis  
Kaminsky, David, St. Louis  
Karam, James, St. Louis  
Kasha, Robert L., Jefferson  
Barracks  
Kayser, F. W., St. Louis  
Keeney, Ivan, St. Louis  
Keenot, John, St. Louis  
Kelso, Thomas W., Jr., St.  
Louis  
Kennedy, Hall, St. Louis  
Kidd, Frank H., St. Louis  
Klebb, Larry, St. Louis  
Klein, James C., St. Louis  
Klingberg, W. G., St. Louis  
Klinge, Fred, St. Louis  
Knabb, H. E., St. Louis  
Knabb, Ken E., St. Louis  
Kneznokoff, Leonard, St.  
Louis  
LaForce, Richard F., Car-  
thage  
Lange, Howard L., Belleville,  
Ill.  
Lanius, J. W., St. Louis  
Laskowski, E. J., St. Louis

Law, Charles H., Amity, Oregon  
Lawless, Edward C., St. Louis  
Lehman, Joseph W., Jr., Belleville, Ill.  
Lemmon, G. B., Jr., St. Louis  
Letterman, Gordon, St. Louis  
Liebman, Samuel, St. Louis  
Lionberger, John R., St. Louis  
Lockhardt, C. E., St. Louis  
Loquvam, George, St. Louis  
Lury, John J., St. Louis  
McCaffrey, E. J., St. Louis  
McCain, French, St. Louis  
McCorkle, Lee, Marshall  
McWilliams, John E., St. Louis  
Margulis, Sam, St. Louis  
Mariae, Donald, St. Louis  
Martin, William R., St. Louis  
Masunaga, Eichl, St. Louis  
Mattingly, Louis T., St. Louis  
Mauch, S., William, St. Louis  
Meamber, Donald L., St. Louis  
Meisenbach, A. E., Jr., St. Louis  
Mellor, Norman H., St. Louis  
Melgaard, Ross, St. Louis  
Merritt, Burch A., St. Louis  
Merritt, William E., Fancy Farm, Ky.  
Miksicek, John E., St. Louis  
Milster, 1st Lt. C. R., Camp Shelby, Miss.  
Missey, Wilburn C., St. Louis  
Moland, Oscar G., Camp Bowie, Texas  
Moore, Robert A., St. Louis  
Moulton, Kriegh, St. Louis  
Mueller, C. Barber, St. Louis  
Mueller, V. A., Jr., St. Louis  
Noah, Joseph, Webster Groves  
Noda, Richard Y., St. Louis  
Nold, Ralph, St. Louis  
O'Connor, William B., St. Louis  
Palmer, John, St. Louis  
Parker, W. B., St. Louis  
Payaszczak, Paul M., St. Louis  
Payne, George C., Mexico City, Mexico  
Peck, Chester, Malden  
Peckham, John W., St. Louis  
Pfeiffenberger, Mather, Alton, Ill.  
Pfeiffer, C. Huy, St. Louis  
Pfeiffer, Ralph, St. Louis  
Pickett, Frank, St. Louis  
Pisaturo, Orlando J., St. Louis  
Poirier, Ralph, St. Louis  
Powell, Earl A., St. Louis  
Putnam, John A., Carthage  
Ramsey, J. H., St. Louis  
Ransom, Charles H., St. Louis  
Ransom, D. H., Jr., St. Louis  
Ray, James C., St. Louis  
Raymond, J. R., St. Louis  
Reches, A. G., St. Louis  
Reid, Prentiss E., Sparta, Ill.  
Revell, Arthur J., Pittsburg, Kan.  
Reynolds, W. J., St. Louis  
Rice, Herman, St. Louis  
Richardson, Mary M., Jefferson City  
Romendick, Samuel S., Koch  
Rosen, Allan M., St. Louis  
Ross, Silas E., Jr., St. Louis  
Rubel, Joseph L., St. Louis  
Russell, Alexander L., St. Louis  
Santer, D. G., St. Louis  
Schaftenaar, Richard, Pine Lawn  
Schwartz, Ernest, St. Louis  
Schwartz, H. F., Koch  
Schweitzer, Fred, St. Louis  
Schmidt, Charles A., Gerald  
Schmiemeier, Roy H., St. Louis  
Schricker, J. Louis, St. Louis  
Schulein, Vernon, St. Louis  
Seidler, William A., Jr., St. Louis

Shahan, Philip T., St. Louis  
Sherrard, V. A., St. Louis  
Showalter, John R., Glendale  
Siegel, John H., Collinsville, Ill.  
Slaughter, John M., St. Louis  
Slee, Vergil N., St. Louis  
Smith, Robb, St. Louis  
Solomkin, Mark, St. Louis  
Spector, Isaac, St. Louis  
Spencer, LeGrand D., Logan, Utah  
Spitzer, Ernest, St. Louis  
Stanbro, William W., Koch  
Sternner, John J., St. Louis  
Stolf, Julius E., St. Louis  
Stortz, Robert, St. Louis  
Summers, J. S., St. Louis  
Sweet, Herbert C., Koch  
Sweetman, Homer, St. Louis  
Tatum, F. K., St. Louis  
Templeton, James S., Pinckneyville, Ill.  
Thimser, Udell S., E. St. Louis, Ill.  
Tillman, Walter W., St. Louis  
Tongon, Lyle A., St. Louis  
Troy, Jack, St. Louis  
Uhlemeyer, Henry A., Jr., St. Louis  
Vatterott, Paul B., St. Louis  
Vincio, Liva, St. Louis  
Viviano, J. G., St. Louis  
Walton, John E., Alton, Ill.  
Walton, William H., Belleville, Ill.  
Wear, Thomas R., St. Louis  
Wedel, Louis E., E. St. Louis, Ill.  
Wedig, John H., St. Louis  
Welch, J. K., St. Louis  
Wester, Edward A., Mt. Sterling, Ill.  
Wester, Sarah S., Mt. Sterling, Ill.  
Weygandt, Stefen, Memphis, Tenn.  
Whitefort, Arthur R., St. Elmo, Ill.  
Whitlock, G. F., St. Louis  
Williamson, Maurice R., Alton, Ill.  
Wilson, F. E., Highland, Ill.  
Withers, Martin, St. Louis  
Worrell, James, St. Louis  
Zillgitt, George H., St. Louis  
Zirpolo, Gene A. V., Plainfield, N. J.

**Visitors—44**  
Appel, O. W., St. Louis  
Burns, D. W., Chicago  
Chase, Elinor, Kansas City  
Cleaver, Miss B., Kansas City  
Corzine, Helen T., St. Louis  
Delony, Chase, Birmingham, Ala.  
Depke, Frank M., St. Louis  
English, Judge Fred L., St. Louis  
Eubank, Will R., St. Louis  
Ewing, Cap., Houston, Texas  
Faber, W. J., St. Louis  
FitzGerald, John, Jr., San Francisco  
Follenus, B. W., St. Louis  
Frank, Julia, St. Louis  
Fry, Gerald D., St. Louis  
Hagermeyer, Wilma, St. Louis  
Hartstone, W. A., University City  
Hehmann, Dorothy, St. Louis  
Hoffstatter, L., St. Louis  
Kafka, Captain, Scott Field, Ill.  
Kleinschmidt, L. S., Indianapolis  
Lewis, Ben W., Boston  
Loranz, C. P., Birmingham, Ala.  
McCarthy, Ray F., St. Louis  
Mayfield, A. E., Sikeston  
Medlock, Byron, St. Louis  
Meffert, Carl, Chicago  
Miller, H. S., Dexter  
Mothershead, Edgar J., Clayton  
Norton, Lesa, St. Louis  
Osbourne, B. T., St. Louis  
Ostfeld, Simon, St. Louis  
Patton, Eileen, St. Louis

Pearce, J. W., University City  
Pratt, Donald E., St. Louis  
Sainsbury, E. P., St. Louis  
Sanderson, F. L., Stanford, Conn.  
Schrader, Jack, St. Louis  
Schwitalla, Father Alphonse M., St. Louis  
Steiner, H. A., Owensville  
Stone, L. W., St. Louis  
Wilkin, D. J., Chicago  
Wilson, Hester, Kansas City  
Woolsey, R. D., St. Louis

**Exhibitors—132**  
Abbott, C. R., Chicago  
Ackerman, L. V., Columbia  
Allen, William, New York  
Anderson, R. B., Chicago  
AuBuchon, H. F., Chicago  
Bakunas, A. F., St. Louis  
Bauman, Carl S., St. Louis  
Baustert, W. G., Two Rivers, Wis.  
Bear, B. L., St. Louis  
Breckenkamp, A. W., St. Louis  
Bresnan, James, St. Louis  
Brown, Charles S., St. Louis  
Brown, Elmore, Columbus, Ohio  
Buecher, F. M., St. Louis  
Burley, E. J., St. Louis  
Carpenter, Ralph, Bloomfield, N. J.  
Caso, A. Arthur, Chicago  
Caso, Edward, Chicago  
Caulbe, W. G., Kansas City  
Cleary, Leo A., St. Joseph  
Colen, J. W., Chicago  
Cramblet, L. H., Bloomfield, N. J.  
D'Amato, E. R., St. Louis  
Davis, W. H., New York  
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## BOOKS FOR LEISURE MOMENTS

### THE FINNEY SAGA

The difference in the technic and practice of medicine in the present day as compared with that at the turn of the century is vividly delineated in J. M. T. Finney's "A Surgeon's Life" (G. B. Putnam's Sons, New York). Orphaned by the early death of his mother, John Finney benefited by a fortuitous combination of circumstances which allowed a healthy growth under the

tutelage of three successive "mothers," the last of whom financed his medical education.

One of the three or four men who could celebrate the fiftieth anniversary of the founding of Johns Hopkins Medical School after that many years of continuous service, the author describes the almost cataclysmic changes that have taken place in the practice of surgery. He received honor after honor, recognition and plaudits for well-deserved merit. The details of his rise to fame reflecting steadfast devotion to patient and colleague are faithfully reproduced. While he lives to play with his grandchildren it is well that he has set down his tale.

Each physician will find something of special interest in the volume.

B. Y. G.

## BOOK REVIEWS

**THE AVITAMINOSES.** The Chemical, Clinical and Pathological Aspects of the Vitamin Deficiency Diseases. By Walter H. Eddy, Ph.D., Professor of Physiological Chemistry, Teachers College, Columbia University, Director, Bureau of Foods and Sanitation, "Good Housekeeping Magazine," and Gilbert Dalldorf, M.D., Pathologist to the Grasslands and Northern Westchester Hospitals, Westchester County, New York. Second edition. Baltimore: The Williams & Wilkins Company. 1941. Price \$4.50.

The marked increase in size of the second edition over the first shows the marked advances in knowledge of vitamins that have accrued from 1937 to the present time. All of the vitamins have been reviewed with separate headings in the experimental and clinical findings. There are excellent chapters on the chemical nature of the vitamins and cellular oxidation. The recent factors that have been found are evaluated satisfactorily.

This is an excellent book for one who is interested in the experimental and practical phases of the avitaminoses and still does not wish to go into a mass of technical experimental data. The material is well grouped and is ably presented. It is not to be recommended for the expert as it makes no pretensions in this direction.

Some of the recent discoveries in the field such as choline is given just passing mention. Inositol is not mentioned at all.

There is an appendix dealing with simple laboratory tests with diagnosis of vitamin definitions which will be found handy.

M. N. O.

**ESSENTIALS OF THE DIAGNOSTIC EXAMINATION.** By John B. Youmans, B.A., M.S., M.D., Associate Professor of Medicine and Director of Postgraduate Instruction, Vanderbilt University Medical School. New York: The Commonwealth Fund. 1940. Price \$3.00.

This is a valuable little text of 417 pages which are filled with the salient points in history taking, physical examination and practical laboratory tests which can be performed in the office. The several parts of the history are discussed briefly as well as a practical outline for history taking which covers only two pages. The author describes how to make a good physical examination quickly, stressing a set order of procedure. A concise neurologic examination is given which most general practitioners can master. Numerous tables on average weights and breath sounds are excellent. The section devoted to physical examination of the heart portrays clearly a thorough study of heart murmurs indicating by representing them graphically what murmurs of the different valves mean. An excellent presentation of the clinical diagnosis of the arrhythmias is well worth one's reading.

Chapter three deals with a set of office laboratory procedures. Even when not performed by the physician himself, he should know all about them. This re-

sults in better interpretation, significance and evaluation. In turn this leads to more frequent use of these tests and a more accurate correlation between laboratory studies and the other examinations of the patient.

This is a book one wishes he could have had during his medical school days.

F. S. M.

**SPERMATOZOA AND STERILITY.** A Clinical Manual. By Abner I. Weisman, M.D., Adjunct Gynecologist, Jewish Memorial Hospital; Clinical Assistant Visiting Gynecologist and Obstetrician, Metropolitan Hospital, New York. With a Foreword by Robert L. Dickinson, M.D. With 77 illustrations. New York: Paul B. Hoeber, Inc., Medical Book Department of Harper and Brothers. 1941. Price \$5.50.

Heretofore, in the study and treatment of cases of sterility, emphasis has been placed on investigation of the female partner. Examination of the male has been omitted entirely or has been perfunctory. One wonders how studies of spermatozoa could have been so long neglected. It is only in the last few years that husbands have been examined for sterility before their wives were subjected to elaborate and painful tests, and even to surgery.

This book gives a detailed but, withal, simple technic for semen appraisal to help fix and determine the cause of sterility. The constituents of semen are analyzed carefully and seminal analysis placed on the same level as the routine analysis of other body fluids. The text is addressed particularly to the general practitioner who is likely to diagnose and treat his own sterility cases, but is adequate in all respects for any specialists who is studying a sterile couple.

A complete and detailed description of office technic is given including collection and transportation of the specimen, macroscopic, microscopic and chemical examination, Huhner tests, sperm examination in the female as well as the male. To make this a routine procedure in the indicated cases requires no more training and equipment than is required in the counting and differentiation of blood cells. There are chapters on artificial insemination and its medicolegal aspects; on detection and analysis of semen in legal medicine, and on the treatment of sperm deficiency.

This book is the result of an effort to bring to the attention of those interested in sterility the tremendous importance of the study of semen, spermatozoa and spermatozoa migration in the female. It concentrates in one book all information available on this subject and attempts to impart the new knowledge and to dispel old and stubborn errors that have been carried along from text to text. The extensive bibliography should help make this a source book for further study of the many and fascinating phases of human and comparative spermatology.

This unique monograph proves conclusively that Dr. Weisman is a careful student, scientific observer and excellent teacher.

L. C.

X-ray films of the unerupted permanent teeth as well as of the long bones should be used as aid in the early diagnosis of congenital (existing at or before birth) syphilis, Bernard G. Sarnat, M.D.; Isaac Schour, D.D.S., and Robert Heupel, D.D.S., Chicago, state in *The Journal of the American Medical Association* for June 21.

They report the case of a Negro girl aged 4 years in whom a diagnosis of congenital syphilis was made by x-ray films of her unerupted permanent teeth and confirmed clinically two years later when the teeth had appeared in the mouth. X-ray films taken of the girl's long bones when she was 2 years old were of no diagnostic value, the three men say, but had x-ray films of the mouth been taken at the same time the diagnosis of congenital syphilis could have been confirmed by the dental abnormalities.

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### THE RADIOLOGIC MANAGEMENT OF CANCER OF THE CERVIX

EDWIN C. ERNST, M.D.

ST. LOUIS

Cancer of the cervix is the most frequent type of pelvic malignancy observed by the general practitioner and, fortunately, in the early stages it is quite accessible and amenable to radiation therapy. Especially during the last decade new treatment procedures have been developed and their relative values analyzed from almost every conceivable angle. Nevertheless, there remain many unsolved therapeutic, radiologic and surgical problems. It should be emphasized that a thorough clinical, radiologic and pathologic training is most helpful, especially in the treatment of the borderline and more advanced stages of this disease.

The management of cancer of the cervix is handicapped greatly by the many complications accompanying this disease. The primary growth is usually of secondary importance. A good axiom to keep in mind in its treatment is "Be alert to the possibilities beyond the cervical canal." Therefore, the usual routine vaginal and biopsy studies should be supplemented by carefully analyzed history and physical examination data. The urinary system should be checked and the usual routine and special laboratory blood tests completed prior to the planning of the necessary treatment procedures. Careful analyses should be made as to the probable site of origin of the primary lesion, extent and character of the anatomic spread, biologic characteristics and rate of the growth, the actual tissues involved by the tumor and the close proximity of the normal vital structures to the malignant growth under consideration.

One must not be unmindful that in rural communities with limited facilities, when emergencies due to hemorrhages, severe infections or other urinary complications occur, full advantage of the radiation possibilities for the time being must be deferred.

Perhaps much of the foregoing discussion may appear elementary, but my experience at the Barnard

Free Skin and Cancer Hospital and the DePaul Hospital diagnostic cancer clinics has made me appreciate the practical value of each and every one of these preliminary considerations.

#### GROSS MORPHOLOGY

It is indeed fortunate that in the treatment of cervical cancer the degree and rapidity of the response to roentgen ray treatments of the local involvements actually can be visualized. The roentgen ray reaction of the normal vaginal structures can be observed from week to week. In the relatively early or very late tumors the final outcome or prognosis is less problematic than in the borderline stage II and moderately advanced stage III cases. In the early cervical cancer lesions, the end results are most favorable, while in the advanced group curability is almost beyond recall. It must be remembered, however, that other variable factors besides the stage of the local growth may assume importance; namely, the age of the patient, gross morphology of the lesion and the histologic picture of the cancer cells. The gross appearance of the local cervical cancer sometimes may be misleading. The small infiltrating or inverting type of cervical cancer presents a more favorable local picture than the larger and more extensive proliferating cauliflower evverting type of growth, but the reverse is true as to their immediate response to roentgen ray or radium therapy. Occasionally, the proliferating or cauliflower growth disappears almost spontaneously.

The gross morphology of questionable indurated areas may be due to infection rather than carcinomata. The presence of a soft parametrium does not necessarily exclude malignant glandular recurrences, and these possible errors in interpretation must be given due consideration in every case. The logical planning of the therapy procedures depends upon the accurate diagnosis of these questionable recurrent extensions. Additional radiation may be contraindicated seriously in a benign type of pelvic induration, it frequently resulting in undesirable tissue damage to the normal vaginal structures.

The reliability of tumor grading is, perhaps, a

controversial problem. However, conservative histologic grading can be employed to advantage if a uniform system of studying and reporting tumor pathology is adhered to. This type of statistical information is unquestionably of distinct value and may serve as a guide in determining whether or not subsequent therapy procedures are indicated.

#### CLINICAL STAGES

Many different descriptions of the various stages I, II, III, IV cancer of the cervix have been published by various observers, but I have followed the League of Nations Classification:

Stage I. Disease limited to cervix; uterus mobile.

Stage II. Disease spreading into fornices with or without infiltration adjacent to uterus; uterus partially mobile.

Stage III. (a) Nodular infiltration of parametrium extending to wall of pelvis, with limited mobility of uterus or massive infiltration of parametrium with fixed uterus. (b) Superficial infiltration of large part of vagina, with mobile uterus. (c) Isolated metastases in pelvic glands with relatively small primary growth. (d) Isolated metastases in lower part of vagina.

Stage IV. (a) Massive infiltration of both parametria extending to walls of pelvis. (b) Disease involving bladder or rectum. (c) Whole vagina infiltrated, or one vaginal wall entirely infiltrated with fixation of primary growth. (d) Remote metastases.

The management of these many stages of cancer of the cervix requires the application of various forms of radiation therapy. Also, much depends upon the degree of radiosensitivity of the tumor cells throughout the distant pelvic structures.

#### PRELIMINARY ROENTGEN RAY THERAPY

Since preliminary roentgen ray therapy to the pelvis favorably influences local infections, and since the presence of infection apparently increases the radioresistant state of the malignant tumor bed, I routinely advise the application of roentgen ray therapy prior to the introduction of intracervical radium. I have discovered that the use of these external measures prior to the application of radium occasionally results in the apparent complete disappearance of the primary lesion.

Ulcerated lesions of the cervix especially should receive preliminary roentgen ray therapy. Furthermore, in the majority of the cases when external radiations are properly administered, the application of the radium capsule is facilitated. Contraction of the pelvic canal occasionally occurs when the radium applications have been deferred unnecessarily or the external irradiation has been unusually intensive. The logical time for applying radium is within from one to three weeks after the completion of the roentgenization of the pelvic glands, or earlier in some cases. In my experience the observation of the local response to roentgen

ray therapy has been invaluable from the standpoint of determining the degree of curability. In attempting to arrive at a prognosis in a large group of test cases, biopsies were taken after the application of the roentgen ray therapy and again after radium applications and the effectiveness of the treatments carefully analyzed.

#### PROGNOSIS

After the completion of the preliminary roentgen ray therapy, should the appearance of the local tumor, general clinical reaction of the patient and the biopsy findings fail to show favorable reaction, it usually was found that subsequent radium applications proved equally ineffective and a decline in survival rates was noted. On the contrary, and in keeping with the degree of improvements noted, including a study of a second biopsy, the ratio of recoveries was found to be correspondingly increased.

In addition to the age of the patient, stage of the disease, presence or absence of pelvic pain, I believe that the extent and degree of the clinical and histologic reactions to preliminary roentgen ray therapy, are valuable prognostic index findings.

#### THERAPEUTIC PROCEDURES

The daily and total roentgen ray dose of necessity must be varied between wide limits depending upon the size of the patient, the extent and location of the tumor and the probable extent of the peripheral infiltrations to the parametrial, rectal, vaginal and ureteral tissues. All of these factors will influence radically the therapeutic procedures. Thus the radiation quality, number of ports of entry, daily and total dose intensity, rhythm of the x-radiations, target skin distances or filtrations may be varied in order to obtain a uniformly distributed lethal roentgen ray dose to the tumor and the surrounding glandular pelvic structures. Unfortunately, at times, the histologic and clinical relationships may be such that a resistant type of malignant neoplasm may fail to react to any form of radiation.

Diplomatic discussions along appeasement policy lines are useless from a therapeutic standpoint. An overcentralized dose of either roentgen ray or radium has been known to do temporary rectal or intestinal harm. Insufficient radiation of an average type of cervical lesion is positive assurance of an early recurrence of the disease. Such recurrences usually fail to react favorably to subsequent irradiations.

Occasionally it has been reported that a single application of radium or roentgen ray in an early stage I case was sufficient to eradicate completely the supposed malignant lesion. Such a rapid response is an exception to the average result. On the other hand, it has been my experience that external roentgen ray therapy alone is inadequate for the complete eradication of stage I and stage II cancers of the cervix unless accompanied by intra-

vaginal or direct intracervical roentgen ray applications. Nevertheless, preliminary results from intravaginal roentgen ray therapy combined with external roentgen ray treatments through a metal vaginal cone in selected cases have been most encouraging.

Recent studies have established definitely that from 30 to 50 per cent of patients with early cervical cancer who were examined carefully by various surgeons and considered operable later disclosed metastatic lymph node involvements. In from 10 to 20 per cent of the early cervical cancers without palpable parametrial extensions, malignant lymph node involvements subsequently developed. In 43.3 per cent of the more advanced cervical carcinoma cases studied by Schautau, the autopsy findings indicated lymph node extensions beyond the true pelvis. These observations definitely indicate the probable diagnostic limitations of attempting to exclude lymph node involvements by means of physical examinations alone, even in the early operable cases. It would seem almost mandatory, therefore, that both the local and general forms of irradiation are the minimum requirements for the treatment of early cervical cancers.

Even in stage I cases under the League of Nations' classification, it should be remembered that in planning the preliminary course of external roentgen ray treatments, every effort should be made to concentrate the beam of roentgen ray to the regions of the parametrial and glandular areas outside of the uterine canal zone rather than centering or cross firing the external roentgen ray beam solely in the direction of the cervical tumor.

In stages I and II the cervical cancer lesions should be treated by the application of radium within from one to three weeks or earlier after the completion of external roentgen ray therapy, depending upon the constitutional reaction and the local clinical response of the patient to the preliminary roentgen therapy. In stage II cases many therapists prefer to apply intravaginal roentgen ray radiation through a metal cone directly to the cervical tumor. As yet I have not had the courage of excluding intracervical radium applications in all cases in preference to the former method since at least five years must elapse ere final conclusions can be reached. However, roentgen ray therapy has been intracervically administered in selected cases and apparently is proving to be very satisfactory and the future possibilities of this procedure warrant the increasing conservative use of this method.

In stage III, when nodular infiltrations of the parametrium extend to the wall of the pelvis and limited mobility of the uterus and massive infiltration of the parametrium have taken place, the combined methods of irradiation are indicated, external roentgen ray, intracavity radium and occasionally supplemented by intracavity roentgen therapy.

In stage III, section "D," isolated metastases along the vaginal floor, may require direct intravaginal roentgen ray therapy procedures.

In stage III, therefore, the ideal setup is to administer preliminary roentgen ray therapy followed by either intracervical radium or the roentgen ray. Subsequently a second course of external roentgen ray therapy may be indicated.

In stage IV when both parametria are involved and perhaps also the bladder, vaginal and rectal walls, and remote metastases have developed, local radium application usually is contraindicated. External roentgen ray radiation is the palliative treatment of choice, but more frequently than otherwise the full intensive dose even may require modifications.

In any event the daily treatments may be decreased and the period of irradiation prolonged. The effective range of the use of radium in the stage I cases occasionally may be sufficient for complete eradication of the disease, but in the group classified by the League of Nations as stage II, one cannot assume that the disease has not spread beyond the cervix and the tolerance dose of roentgen ray, therefore, must be administered to all and even beyond the pelvic structures.

The greatest problem today is to increase the recovery rate of the stage III cases since many patients fail to receive the necessary effective parametrial regional irradiation, due to unfavorable anatomic or histologic conditions beyond control. Either additional radium or more intensive (higher voltage) external roentgen ray therapy is the only remaining method of attack. I believe that intravaginal roentgen ray therapy in a small group of cases has been most helpful. In the very early stage IV cases, when the anatomic possibilities for satisfactory radium applications are absent, external roentgen ray therapy through from four to seven ports of entry is the preferred method of treatment. However, any method of irradiation must not be applied beyond the limits of tolerance of the normal structures in these hopeless cases if palliation following irradiation is to be expected. In four years of experience "stepping up" the potential to 400,000 volts has been increasingly effective, perhaps due to the more efficient deeper lethal tumor dose, especially when the pelvic diameters are greater than 23 centimeters.

#### TUMOR DOSE

Unfortunately there are too many different methods employed to describe radiation dosage; for example: (a) number of roentgens for all fields are stated as a grand total rather than a single field, the total dose as stated being 12,000 r, and yet the tumor only received 2,500 r in the thin patient and 1,250 r within the pelvis of the larger patient; (b) milligram hours of radium without much additional accurate data as to the skin distance and detail as to the filtration.

In short, there is much confusion in the expres-

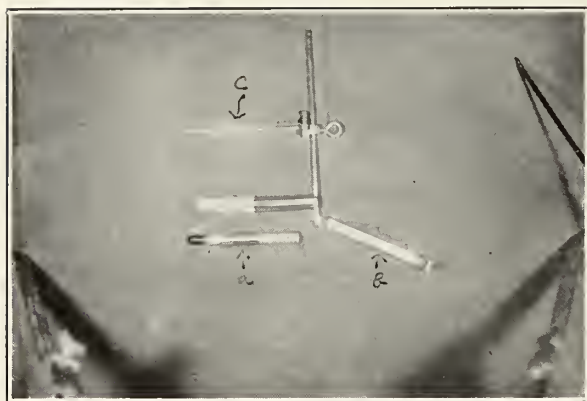


Fig. 1. Vaginal ionization chamber holder. (a) Ionization chamber. (b) Adjustable arm for different levels. (c) Anterior abdominal wall pointer.

sion of dosage although a definite internationally accepted dosage unit is available.

Of course, it is realized that when a treatment problem is presented the interest of the radiologist and the patient is in obtaining a lethal and effective dose to the tumor, but with the conservation of the normal surrounding tissues.

Maximum tumor damage and minimum injury to the normal structures and body as a whole are the ideal goal, which information can be had by examining the results of a large series of cases; but it is equally true that many technics employed can be analyzed on paper in advance as being inadequate because of insufficient irradiation of the malignant growth in question.

Precalculation or preferably actual measurements of the tumor dose is more desirable, if not almost obligatory, for the best interest of the lesions to be treated and the future of radiation therapy progress and recording of effective dosage administration. At least the probable tumor dose must be kept in mind.

Accurate knowledge or the determination of what constitutes radiosensitivity can be obtained or analyzed only if the approximate amount

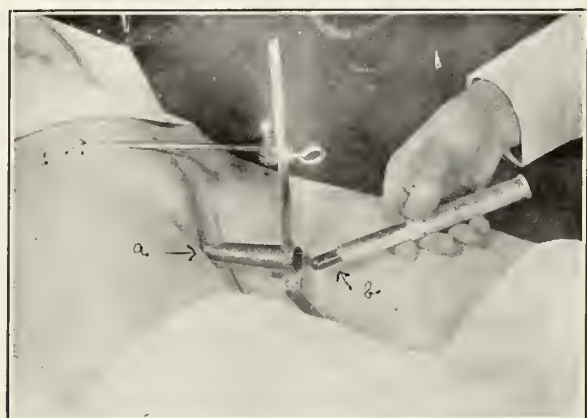


Fig. 2. (a) Vaginal chamber holder in position. (b) Ionization chamber calibrated in roentgens. (c) Pointer denotes vertical location and distance of the ionization chamber within the vaginal wall from the anterior skin.



Fig. 3. Ionization chamber in position toward the parametrium.

of radiation reaching the tumor is a known factor.

Therefore, I have adopted the method of speaking only in terms of the tumor dose (not the external skin dose) within the vaginal vault toward the parametrium, and accordingly increase the external dose, ports of entry and focal skin distance until the required 2,500 r or 3,500 r is reached at the tumor site.

More frequently than otherwise the significance of the size of the patient from the standpoint of dosage is overlooked. In the average thin patient two ports of entry may be sufficient for obtaining the desired lethal pelvic irradiation dose. On the other hand, a larger patient may require three or four additional ports of entry in order to irradiate adequately the pelvic structures. Therefore, it is important to determine accurately, and preferably directly measure, the total amount of irradiation reaching the glandular and parametrial structures of the pelvis.

I have been able to accomplish this by means of the ionization chamber holder shown in figure 1. This can be introduced into the vagina and the actual roentgen ray dosage measured in roentgens at the level of the cervical canal and the tissue roentgens per minute at the level of the cervix within the vaginal vault in a patient measuring 17 cm. compared to another patient measuring 29 cm. When the dose is measured directly into the vagina there may be a difference of 100 per cent in favor of the smaller patient as to the amount of radiation actually reaching the cervix.



Fig. 4. Ionization chamber within the vaginal vault for directly measuring the tumor tissue dose in roentgens.

It can be noted in figure 2 that the ionization chamber (a) is being introduced into the vaginal holder which in turn is fixed in the vaginal vault. The measuring chamber can be removed without removing the vaginal holder and another check made under different voltage conditions. Any section, or level, of the vaginal vault may be measured in tissue roentgens per minute.

In figure 3 the ionization chamber can be observed measuring the actual roentgen dose within the important parametrial region during the period of actual roentgen ray therapy. From 200,000 to 400,000 volts usually are employed through two anterior and two posterior fields measuring 12 by 15 cm. or 12 by 17 cm.

In figure 4 the measuring chamber is in direct proximity to the cervix.

Marked destruction of the tumor bed interferes with the orderly process of regression. The integrity of these cells must be conserved by the judicious selection of the proper radiation procedures. When complicated by infection the threshold of necrosis is at a dangerously low level.

#### RADIUM

Intracervical and intravaginal radium applications likewise should be individualized. In an uncomplicated stage II carcinoma of the cervix I usually employ a cross arm applicator containing 50 milligrams of radium element, filtered with respectively 1.3 and 1.8 millimeters of gold and 3 mm. of aluminum. The cross arm is introduced into the cervical canal (without anesthesia) with a minimum of trauma to the cervical tissues and allowed to remain in the cervical canal for from one to four days, delivering a maximum dose of 5,000 milligram hours. Occasionally the radium is removed daily and reintroduced the following day.

Lateral wall colpostats containing 25 milligrams in each capsule, filtered with 1.8 millimeters of gold, 3 millimeters of aluminum and from 5 to 10 millimeters of rubber or composition material are allowed to remain in position toward the parametrium for from one to three days, depending upon the size of the vaginal vault.

Variations in this technic will depend upon the primary cervical lesion, extent, and size of the growth, the biopsy findings and the complications present, if any.

Radon or radium seed applications may be employed in selected cervical cancer tumors, or recurrences, but in my experience the indications for these procedures have been extremely limited.

#### SUMMARY

1. It is during the early stages of cancer of the cervix when the signs of this disease are objective rather than subjective that the chances for a cure are most promising.

2. The function of roentgen rays in the treatment of carcinoma of the cervix is twofold; namely, to clean up the infection and to obtain uniform dis-

tribution of the radiation throughout the parametrium and the primary nodes of the pelvis.

3. Individualization in the management of the more advanced stages of cancer of the cervix requires the closest cooperation of the radiologist, pathologist, surgeon and internist.

4. This is especially true of radiation treatment of the advanced stage IV cancers of the cervix. These hopeless cases are best managed with roentgen therapy alone.

5. External roentgen therapy or radium alone is inadequate for the complete eradication of cervical cancer cells except in the extremely early doubtful or borderline stage I cases.

6. In the stage I cases intracervical roentgen ray or radium may precede or follow external roentgen ray therapy, but the more serious problems are the stages II and III cancers of the cervix. In these latter cases preliminary roentgen ray therapy is extremely essential from the standpoint of reducing the local infection and limiting the pelvic extensions of the cancer processes.

7. The clinical and histologic reactions following preliminary roentgen ray therapy, in addition to other factors, are helpful in determining the prognosis of stages II and III cancers of the cervix.

8. When the disease has extended into the parametria or lower lymph nodes, the most penetrating type of external roentgen ray radiation through as many as seven ports of entry is necessary, followed by intracervical radium or intravaginal roentgen ray therapy.

9. Periodic observation of the vaginal vault during the roentgen ray therapy procedures for studying the vaginal mucosa changes or beginning radio-endothelial reactions is an important consideration in the planning and modification of the roentgen ray dose.

10. The determination of the actual tumor tissue dose by any method is essential for the radiologic management of cancer of the cervix either by the calculated or direct method. A method of directly measuring the tumor dose and a description of the vaginal holder have been described heretofore.

3720 Washington Avenue.

#### REPORT CASE IN WHICH SYMPATHECTOMY DID NOT CAUSE MALE STERILITY

The commonly held view that sympathectomy (removal of a part of the sympathetic nervous system) produces sterility in the male, according to Geza de Takats, M.D., and Loring S. Helfrich, M.D., Chicago, in *The Journal of the American Medical Association* for July 5, is contradicted by a case in which they report that spermatozoa were found after nerve operations.

Several sympathectomies were performed in their case because of circulatory disturbances, pain and ulceration of the toes, blueness and coldness of the toes and fingers, dizzy spells and nervousness.

While a single case, they point out, is insufficient to settle the question of male sterility after sympathectomy, it shows that sterility does not have to occur as a result of this operation.

## CANCER OF THE CERVIX UTERI

### BIOLOGIC FACTORS IN TREATMENT

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Some of the earliest clinical applications of roentgen rays and radium were made in the attempt to treat cancer of the cervix uteri. One can understand readily why these lesions were among the first to be selected. The primary tumor is accessible for palpation as well as visual inspection and the uterine cavity can be employed easily as an anatomic container for radium. Gynecologists from the outset have availed themselves of this method of treatment, and with advance in the technic of irradiating cervical cancer there have been important contributions to radiotherapy.

Experience soon demonstrated that cervical cancer responded favorably to radiation. It was also shown that normal tissues within that region tolerated the doses required for control of the lesion. The aim of radiation treatment is to deliver an adequate dose to the tumor-bearing region with a minimum of damage to normal tissues. The biologic factors responsible for the regression of a given lesion and the recovery of normal tissues are not understood fully. Stewart has defined radiosensitivity as that combination of circumstances resident in the tumor or the host which permits marked or total local tumor regression under doses of radiation sufficiently small to preserve the essential integrity of the host's tissue. The term radiosensitivity is not necessarily related to prognosis. It does not imply that a high percentage of cures will be obtained, because many of the most sensitive lesions tend to recur. Neither does it imply that a tumor will disappear from small doses. It is obvious that there are degrees of radiosensitivity.

Several authors have attempted to predict the radiosensitivity of cervical cancer on the basis of the microscopic appearance of the biopsy specimen. A more accurate estimate of radiosensitivity usually can be made on the basis of the gross character of the lesion. For this purpose cervical cancers can be divided into two groups.

The first is the cauliflower variety of tumor. These may be small local lesions involving only one lip of the cervix, or they may be large tumors almost filling the vagina. They are everting growths tending to form bulky lesions with a minimum of invasion of deeper structures. They are characterized by friability and vascularity. It is obvious that they have a rich blood supply and that the tumor is supported by only a loose fragile structure of blood vessels and connective tissue. These normal structures supporting the tumor form the so-called tumor bed. Among the cauliflower lesions bleeding is apt to appear early and may be trouble-

some. Due to their marked friability, pieces of tissue are dislodged easily and ulcerations are common. Deeper portions of the tumor are exposed to infection through superficial ulcerations and necrosis and slough may result. In spite of the high incidence of infection in cauliflower lesions, clinical experience has shown that they are the most sensitive types of cervical carcinomas.

The second type of cervical cancer is an infiltrating growth with a marked tendency toward invasion. They differ from the cauliflower lesions chiefly on the basis of the tumor bed. Infiltrating types are characterized by diffuse enlargement of the cervix, are usually nodular, always markedly indurated and frequently present an intact surface epithelium without ulcerations. Nodulation and induration apparently are due to an attempt on the part of the tumor bed and other normal tissues to resist invasion by throwing up a barrier of connective tissue. Fibroblastic activity, therefore, is marked and the blood supply may be scant. Due to the tendency for the tumor to grow beneath the superficial epithelium and the lack of friability, bleeding is usually a delayed symptom and ulcerations with infection are not common. In spite of the relative freedom from necrosis and slough, infiltrating types are considerably more resistant to radiation than cauliflower varieties.

In addition to these two types there are many cervical cancers presenting large craters. These are difficult to classify as either cauliflower or infiltrating lesions, although it is reasonable to assume that they began as one of those forms. For that reason they probably do not deserve separate classification. The formation of a crater depends chiefly upon necrosis and slough following infection. Such a phenomenon obviously is associated with advanced cancer in most instances. Friability also may be a factor in the formation of a crater. In patients presenting such lesions one often can obtain the history of a sudden profuse hemorrhage. Bleeding of that sort may mark the time at which a large portion of the crater was formed. It is reasonable to assume that everting growths would be more apt to result in cratered lesions due to their greater friability and subsequent infection with necrosis and slough. Evidence that this is true is shown clinically by the relatively favorable radiosensitivity of many cratered forms.

From the description given, it can be seen that one of the important differences between cauliflower and infiltrating cervical cancers is in the tumor bed. Explanation of their biologic differences must be made on the same basis. The action of radiation is a combined attack upon cancer cells and tumor bed. The more important effects produced in cancer cells include swelling of the cytoplasm, pyknosis and fragmentation of nuclei, hyalinization and degeneration. In the tumor bed there is an almost immediate infiltration of lymphocytes and plasma cells. There is a gradual increase in fibroblastic activity that may result in a dense con-

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nective tissue overgrowth. A complete breakdown in capillary structure is apt to occur with obliteration of blood vessels by thrombosis or endarteritis. Following complete regression there may be fibrotic tissue that is quite hard, dense and avascular.

Alterations produced in cancer cells appear to be a response to injury produced by radiation. Failla has demonstrated that swelling of the cytoplasm is associated closely with if not responsible for cellular death. He found that the injection of distilled water into the irradiated area increased the amount of swelling. These data contribute experimental evidence upon the importance of environment in tumor regression.

Changes produced in the tumor bed also appear to be a response to injury. They can be related readily to regression. If before treatment there exists an abundant opportunity for fibrosis and vascular alterations there should be greater possibilities for regression. By the same reasoning one may expect a less favorable result in the presence of preexisting fibrosis and ischemia. This is shown clinically by the marked radioresistance of recurrent lesions in which earlier irradiation produced extensive changes in the tumor bed. It is evident that the status of the tumor bed is an important factor in clinical response.

There is considerable evidence that it is essential for alterations in cancer cells as well as in the tumor bed to proceed in an orderly manner if a satisfactory result is to be obtained. Several factors may interfere. One of the most common is overtreatment. If normal tissues of the tumor bed are damaged beyond repair, there is risk of necrosis and death of those structures. In such instances there is marked interference with fibroblastic and vascular changes. Such a breakdown may liberate the growth from most restraining mechanisms normally present and be followed by rapid proliferation rather than control of the lesion. Infection also may be responsible for treatment failures. The presence of infection tends to lower the threshold for necrosis. That is, lesser amounts of radiation are required for producing necrosis and slough in badly infected lesions. At the same time, it should be noted that large doses of radiation may be required because infection is believed also to contribute to greater radioresistance.

In planning radiation for cervical cancer it is essential to individualize the treatment of each patient. No single technic can be applied to all lesions. Every effort should be made to reduce infection. In cervical cancer this can be done best by preceding radium treatment with a course of roentgen rays. Vaginal irrigations are useful and can be supplemented by other procedures. The use of an air spray such as is used for nose and throat conditions has been found practical. The mechanical washing away of infected debris may be of as much benefit as the direct action of chemical solutions used for spraying. Among the preparations of value are sodium perborate, hydrogen peroxide

and zinc peroxide medicinal. The action of the latter medication depends upon the slow liberation of nascent oxygen following activation by heat. More effective use of this preparation has been obtained by applying it as a paste directly to the cervix. Mallophone has been painted on the lesion in the attempt to obtain bactericidal effects deep in the tumor by absorption of the chemical with eventual elimination by urine.\* The production of fermentation by sugars also has an effect upon bacterial flora. It is difficult to establish by clinical observation any superiority for one method over another, except that the elimination of slough apparently proceeds more rapidly if oxygenization is added to procedures having only a bacterial effect.

In addition to combating infection it is essential that severe radiation necrosis be avoided. The aim of radiation treatment is to deliver an adequate dose with a minimum of damage to normal structures. In cervical cancer one usually thinks of skin, bladder and intestine as the most important regions apt to be overirradiated. Too little consideration is given parametrium, myometrium and, in particular, the normal tissues of the tumor bed. It is chiefly by radium that severe damage to those structures may be produced. To reduce risk of radiation necrosis one must avoid large doses from any given source of radium or too intense "cross fire" at any given point.

For each patient it is essential to consider all the physical factors of treatment in the effort to obtain a distribution of radiation best suited to the lesion in question. It is equally important to consider all the biologic factors of regression in the attempt to arrive at a predetermined dose believed adequate for control of the tumor. By careful planning of treatment upon physical and biologic factors one may expect an improvement in clinical results. During the last two decades average survival rates have gone far beyond the 20 per cent five year salvage formerly reported by most clinics. Recently some authors have reported more than 30 per cent of their patients alive and well for the same period. Acknowledgment must be made of the possibility that a more favorable type of clinical material has contributed to the improved results. This is not only to be expected as the result of earlier recognition of cancer by physicians but it is also possible that, due to programs of lay education, patients now investigate suspicious symptoms more promptly.

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\*Supplies of all these preparations were contributed for clinical trial by the Mallinckrodt Chemical Company, St. Louis.

The possibility that certain types of cancer growths of the gastrointestinal tract may be diagnosed by means of a gastroscope (an instrument for inspecting the interior of the stomach) is suggested in *The Journal of the American Medical Association* for July 19 by C. Norman Giere, M.D., El Paso, Texas.

## BREAST CANCER

### A NEW INCISION FOR RADICAL OPERATION

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ST. LOUIS

Since the time of Galen when the breast was removed with a single stroke of the knife and the wound cauterized, not only to stop bleeding but also to destroy fragments of cancer left behind, there have been many surgical procedures and numerous skin incisions, each an endeavor to eradicate the cancer or improve the operative result.

From the transverse ellipse incision of LeDran, the oblique ellipse incision of Lizar and later the incision of Pancoast with extension to the axilla and the dinner plate incision of Gross to the complete radical operation of Halsted and Willy Meyer, there has been steady, if slow, improvement in the resulting number of successful operations.

That there was something to be desired either from a cosmetic or functional result is shown in the varied modifications in the skin incisions. Among them I might mention the operations of Kocher, Warren, Rodman, Handley, Jackson, Stewart, Greenough, Coughlin, Percy, Bulloch, Maclean and others who have offered valuable contributions for improvements in this field.

As a further contribution, while recognizing that no one incision is suitable for all cases of malignant tumors, I am presenting an incision which has been most satisfactory in meeting the requirements of a radical surgical operation for many cancers of the breast.

Any operation for the removal of a cancer of the breast must take into consideration three essential steps. First, the incision should be so planned that it will circumscribe the skin over the breast at least two inches from the margin of the tumor and that it can be extended to expose the contents of the axilla and the anterior rectus sheath at the epigastric triangle. Secondly, it must facilitate the removal of not only the anterior sheath of the rectus abdominis muscle but a wide area of the

deep layer of the superficial fascia, with breast, both pectoral muscles, all axillary fat and lymph nodes as well as the fascia overlying the external oblique, the serratus anterior and the latissimus dorsi muscles. Thirdly, it must be planned, when the location of the tumor permits, for a closure of the operative wound with the least impairment of function of the arm and the best cosmetic result. Closure of the wound, however, should be a secondary consideration to the removal of the tumor.

Since April 1939, I have been employing an incision which evolved out of a repair of a Stewart incision for cancer of the breast. The two curves of the transverse incision were not similar, the lower being a flatter curve. In suturing from the sternal end, I had a redundancy in the upper flap which necessitated the removal of a triangle of skin, leaving a vertical incision extending upward in the posterior axillary fold. The cosmetic result was excellent. I often had thought that an incision from the axillary end of the Stewart incision and a similar one downward from the sternal end would be an aid to a good exposure of the field of operation but I had never before put it into effect. In a study of how best to accomplish this, I found that the cleavage lines or tension lines of the skin over the breast are more or less oblique running downward from the posterior axillary line parallel with the ribs toward the midline of the body. If one will draw a line from the posterior axillary fold at the arm through the nipple, it will reach a point in the male at the ensiform and in the female about two inches below, or lower if the breast is pendulous. From further observation of the human body, I was impressed with the advantage of a more oblique ellipse incision, supplemented by an extension at each end.

#### DESCRIPTION OF THE OPERATION

The incision begins over the latissimus dorsi muscle in the posterior axillary line at the junction of the arm and body. It extends downward and curves forward along the margin of the breast to form the lower edge of the oblique ellipse which circumscribes the breast with the tumor in the center.

From the Surgical Service of William E. Leighton, M.D.,  
Barnard Free Skin and Cancer Hospital, St. Louis.

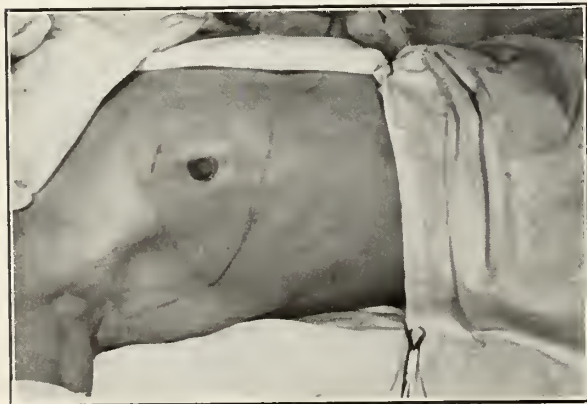


Fig. 1. Incision.



Fig. 2. Dissection of axilla.

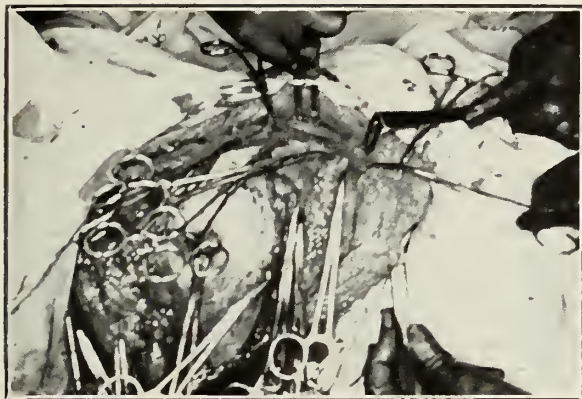


Fig. 3. Dissection of epigastric triangle.

About three or four inches below the beginning of the first incision a second incision curves upward and inward over the breast to form the upper edge of the ellipse, then curves downward to meet the first incision over the rectus muscle and continues on to the level of the costal border or midway to the umbilicus.

The tumor should form the center of the ellipse, the edges of which should be at least two inches from the tumor margin. This incision can be employed in at least 75 per cent of all tumors, in practically all except tumors of the upper and inner quadrant.

The upper flap is undermined readily to the clavicle and sternal border by undercutting. Only a sufficient layer of superficial fascia should be preserved to nourish the skin. The sternal portions of the pectoral muscles are divided at their insertions. The axillary fascia, fat, lymph nodes and sheaths of the axillary vein, which is removed from the anterior margin of the latissimus dorsi to the costocoracoid ligament, are cleanly dissected from the axilla. All the branches of the axillary artery and vein which supply the breast and axilla are ligated and divided with the exception of the thoracodorsal vessels. The anastomosis of the thoracodorsal vein at the chest wall is preserved if possible. The long thoracic and thoracodorsal nerves are guarded care-

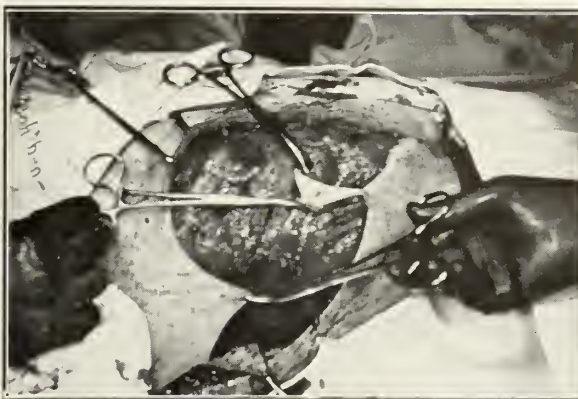


Fig. 5. Excision of redundant skin angle.

fully from injury. Having cleaned out the axillary space, the rest of the upper and inner flap is undermined and the deep fascia and anterior sheath of the rectus abdominis are removed from within outward.

The lower flap then is undermined and the axillary contents, both pectoral muscles and the anterior sheath of the rectus together with the breast and deep layer of the superficial fascia are removed en masse.

The resulting wound usually is brought together easily. If a triangular piece of skin is excised from the upper, outer and lower inner flaps there will be no redundancy of tissue and a smooth appearing closure is obtained. The scar is "S" shaped.

#### ADVANTAGES OF THIS INCISION

1. The line of the ellipse is more in the natural tension lines of the skin.
2. The upper end of the scar is in the posterior axillary line overlying the long axis of the latissimus dorsi muscle and does not infringe on the axilla.
3. It in no way comes in contact with the axillary vessels and does not hamper the motion of the shoulder.
4. The cosmetic effect is ideal in that there is no visible scar on the upper thoracic wall.

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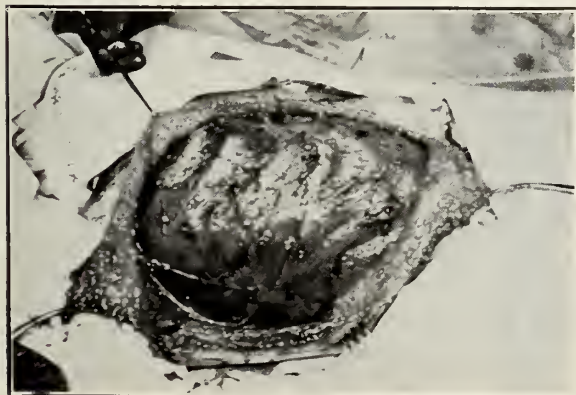


Fig. 4. Complete dissection.

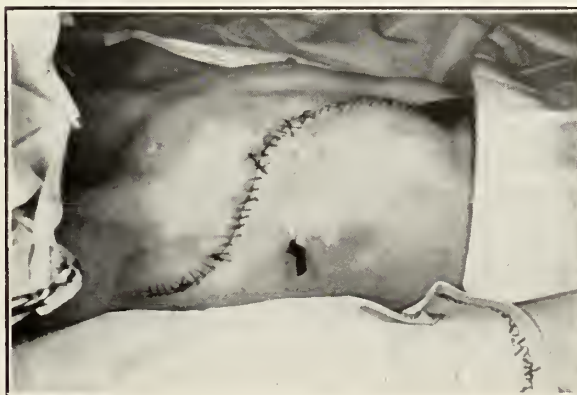


Fig. 6. Closure of skin

## ADAMANTINOMAS OF THE JAW

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Within the last fifteen years nine cases of adamantinoma or ameloblastoma have been encountered on a fairly active service devoted largely to the care and treatment of lesions of the face, mouth and jaws. Because of the comparative rarity of these tumors and because the treatment is difficult and not always satisfactory, it seems not amiss to discuss this lesion in a symposium devoted to a general discussion of cancer. For the sake of clarity an attempt will be made to keep the discussion somewhat general. Within the jaw bones occur a group of cysts which are benign and usually may be eradicated by relatively simple means. Rarely does one encounter within the jaw bones the malignant and usually fatal types of osteogenetic sarcoma such as are seen more commonly in the other bones of the body. Adamantinoma occupies a more or less midway position between the strictly benign and malignant groups just mentioned in so far as malignancy and difficulty of rendering successful therapy are concerned. The tumor is invasive locally but does not metastasize save with the greatest rarity.

The first description of these tumors is accorded to Malassez (1885). He considered their origin to be from parodontal epithelial debris. Bakey and others have felt that such tumors also could have come from oral epithelium. This tissue, they believe, maintains a differential potential of metaplasia which may result in cell formations resembling those seen in the ameloblastomata. However, the important point is that they are composed of cells which are always embryonal in appearance and represent in various degree the early appearance of the enamel organ.

## PATHOLOGY

The gross appearance is that of a meaty or multilocular growth inclosed within a thin parchment-like bony capsule (fig. 1). One or more variable sized cysts make up this loculated tumor. These cysts usually contain serous, mucoid or fatty-like material. The lining epithelium may be either smooth or papillary. All gradations between the solid and cystic types have been seen and described. The solid meaty ones as a rule are more cellular and malignant. They tend to occur more frequently in the superior maxilla.

In studying adamantine epithelioma histologically one may follow in some cases a kind of sequential progressive change. In early solid meaty ameloblastomas one may see a network of epithelial cords located in a slightly embryonic, apparently unre-

sponsive, connective tissue. These epithelial cells are homogenous in appearance and are set closely together. In some places small out budding arrangements can be seen which resemble somewhat the early stages of the enamel organ. Following this stage one finds subsequent changes in the central areas and along the peripheral areas. In the former, the cells tend to become reticular stellate in appearance. In the latter the epithelial cells become more cuboidal and cylindrical in shape. In other cases areas of degeneration in the stellate region sometimes are seen. These small cell-free areas coalesce to form larger cystlike cavities. Between these cavities one finds a more mature stroma. It is fibrous like and may contain bone. Interestingly enough, in the more actively growing tumor areas, osteoclastic resorption with periosteal apposition has been seen.

Growth is by both expansion and infiltration. In the latter the solid types tend to be the most active. Invasion of the spongiosa is less marked in the cystic types. Epithelial structures left in the bone after operation account for recurrence. Needless to say, in this process as in other neoplastic change, a variety of histologic modifications can be seen from time to time. Variations extend from the squamous cell acanthomatous characteristics to the more specialized adult columnar ameloblasts. Occasionally it is exceedingly difficult to make a diagnosis between primary acanthoma of the gum and squamous cell adamantinoma. Assistance may be had by the finding of central cells in the epithelial columns which have the reticulated appearance resembling the enamel organ. In the solid types of ameloblastomas one can recognize three different types of structure. There may be a predominance of one cell type or sharp and definite variations among them. In the squamous cell variety anastomosing cords of this kind of epithelium can be made out, even going on to pearl formation. In these instances search must be made for the more or less isolated foci of cells having the enamel organ characteristic. These make the diagnosis. In the plexiform type the epithelial cells lie in convoluted columns but are without squamous character. There is a rather dense connective tissue about these cells. In the

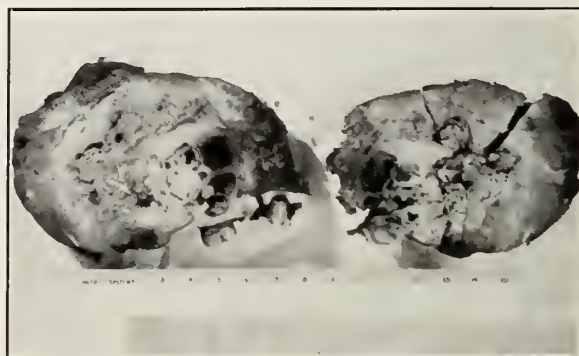


Fig. 1. Gross specimen removed from the case represented in figure 2.

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glandular or third type of ameloblastoma, one usually sees a predominance of columnar ameloblasts. These may be in columnar or alveolar arrangements. In some areas reticulated cells can be seen to be surrounded by ameloblasts. Sometimes one sees epithelial pearls having a border of reticulated cells and ameloblasts. The stroma may be dense or loose, some fields showing areas resembling spindle cell and even round cell sarcomatous features (fig. 3).

Recurrences of these tumors sometimes show marked anaplastic tendencies, even to the extent of a complete loss of specific characteristics.

#### CLINICAL FEATURES

The ameloblastomata are tumors of early adult life. Seventy per cent of recorded cases in the collected literature show the growths to be noted first between the ages of 10 and 35 years. They grow slowly and uninterruptedly for periods of generally ten to twenty years or more. Lewis' seventy collected cases show an average duration of symptoms of eight and one half years. Frantz and Stix report a case with a fifty-one year history. Women apparently are affected more frequently than men. Pain occurs only with the advent of secondary infection or nerve impingement. The only signs are those of expansion and contour distortion. The distended area along the alveolar margin shows usually a lobular mass. The surface is bosselated and a thinning of the overlying bone gives a sense of resiliency on pressure. Perforation or opening of the cortical plates discloses cystic cavities which contain a viscous brownish fluid. Secondary infection may occur and the nature of the tumor may be obscured by the symptoms of osteomyelitis. Invasion of the surrounding soft tissues occasionally



Fig. 3. Photomicrograph of a tissue section from the tumor in figure 1. The central cells are stellate and spindle shaped. The bordering cells are made up of columnar ameloblasts. Note central area of degeneration at the lower most portion of the section.

may take place. Rare instances of metastasis to other body areas are on record. They have been described by Spring, Ewing, Heath, L'Esperance, Simmons and Weisenfel.

The inferior maxilla is the common location. Lewis found adamantinomas to occur eleven times more frequently in the mandible than in the maxilla. Robinson's survey shows the percentage to be eighty-three and seven tenths in favor of the lower jaw. Schmidt's collection of ninety-two cases showed seventy-eight in the mandible and fourteen in the maxilla. Bump's sixty-nine cases show a four to one preference for the mandible.

With the jaw angle locations, one not infrequently sees a marked tendency to tumor extension upward into the ramus and anteriorly into the body of the mandible. Great size may be attained occasionally. Byrk has reported a case in which the tumor weighed three pounds. In the superior maxilla there is a tendency to invade by continuity the orbit, nasal fossa, antrum and base of the brain. Extension follows capsule rupture. This may take place also into the oral cavity as well as into the contiguous tissue.

As previously mentioned, growth is by expansion with some invasion of the bone. Finally, although rarely, soft tissue invasion may occur. In three of our cases there was definite extension and infiltration into contiguous tissue. This is more apt to occur after unsuccessful operative attack. In one case the zygoma was partially destroyed. In none was there any evidence of lymph node metastasis. In four the occurrence was in early adult life. Four were brought to treatment after the age of 60 years. The youngest was 18 years and the



Fig. 2. Adamantinoma involving the jaw bone. The angle location is not uncommon. Note trabeculation and cystic multilocular like appearance. There is some haziness of the borders.

two oldest were 73 years and 78 years of age respectively. Fifteen years was the longest history period recorded in this series. The shortest was six months. Seven cases occurred in females and two in males. The mandible was affected in seven of the cases, the maxilla in two. In five of the patients the tumor was located in the molar area of the mandible. In two it involved the region of the symphysis. The lesions were sustained from one to fifteen years before adequate removal was accomplished. In six of the patients the first sign noted was painless swelling of the alveolar margin. In the oldest patient pain called attention to the lesion. Perforation with evacuation of a foul smelling material first called one patient's attention to the tumor. In three of the cases there was rupture into the oral cavity with fistula formation. In one there was an external invasion of the skin with a peripheral fistula as well as of the oral opening.

These tumors varied in size from 1 to 10 centimeters in diameter. The largest tumor in the lower jaw involved practically the whole extent of the jaw. The main mass was located in the anterior region. It was about the size of a tennis ball and protruded in such a manner that the patient could not close her mouth. Extensions of the tumor laterally reached the molar areas on both sides necessitating the removal of the whole lower jaw. Two patients had adamantinomas of the superior maxilla. One was rather huge and hung as a varied sized bosselated mass from the right side. It had involved the maxillary sinus, nasal fossa, orbit and zygomatic process. The entire mass was removed radically and the entire area was cauterized extensively.

Of the seven cases three had had irradiation without any apparent improvement previous to the time they were seen by us. In a case of a 73 year old woman, in poor general condition and with extensive involvement of the symphyseal region with secondary infection, a trial with roentgen therapy is now underway. Three of the cases gave a history of more than one previous operation. The roentgenogram was misleading in four cases, suggestive in two and definite in three.

If one compares this series with others one finds certain interesting features. In most series practically always the tumors originated in the premolar region. They were seldom seen originating in the anterior tooth area. In our series, however, three begin very definitely in this location.

#### DIAGNOSIS

As a general rule we were able to be reasonably sure of the diagnosis after clinical and roentgenologic study of the lesion. The roentgenogram usually is rather characteristic (fig. 2). The delineation of the walls as a rule is rather sharp, multilocular, with possibly bony trabeculae. With cellular invasion the wall may be hazy. In two of our cases, although adamantinoma was considered, the

diagnosis was made only after microscopic study of the removed tissue from what appeared in the roentgenogram to be only a unilocular sharply outlined cyst of the bone in the region of the angle and ramus.

#### TREATMENT

The only treatment that has proven effective is some method which will destroy effectively the contents of the tumor plus its ramifying projections into the interstices of the bone. All observers agree that these tumors are exceedingly radioresistant. Radiation therapy can only hinder growth and should be reserved for the occasional cases not able to withstand operative attack. If sufficient radiation therapy is given to be lethal, a radiation necrosis of the jaw practically always follows. This is a lesion to be deplored as much or more than the one for which treatment was instigated.

Reports, however, by Pichler (1931) indicate that when the tumors were quite small good results could be obtained with enucleation, curettement and direct implantation of radium into the bony cavities.

New has advised surgical diathermy. In this procedure the tumor is coagulated and the bone is cauterized, usually to such an extent that sequestration involves up to one half a centimeter of bone thickness. During the two to three months required for the sequestra to separate the viable bone bridge remaining increases somewhat in thickness and contour continuity is maintained.

In our more advanced cases, complete surgical resection was considered indicated. The objection to this procedure is of course the mutilation that ensues. This is particularly true when the symphysis is thoroughly involved. In fact, if resection is carried out in these cases the disability is so great that at the present time cauterization with diathermy with the idea of leaving sufficient bone to maintain continuity is the procedure of choice. When the tumor is not far advanced and it is possible to remove the shell of bone and its contents on one side it would seem that one should try cauterization of the cavity as suggested by New. Especially is this true in an individual in whom complete resection would cause a rather objectionable deformity. It has happened that in the majority of our cases the patients have been past the midpoint of life in age or else have already shown recurrence due to insufficient removal at some former time. Therefore, as a rule, complete resection has been performed with the idea of effecting a cure, even at the expense of the type of deformity which unilateral resection of a part or almost all of the jaw causes.

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## TREATMENT OF LINGUAL CANCER

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This is a study of tongue cancers over a ten year period from the standpoint of treatment. Diagnosis is not discussed. Duration of symptoms and extent of involvement of primary lesion and metastasis are considered, particularly in relation to curability.

Ira Kaplan, in the chapter "Radiation Therapy of Carcinoma of the Tongue," in the 1940 edition of "Treatment of Cancer and Allied Diseases,"<sup>1</sup> makes some important observations which not only corroborate mine but those of many others who, during the last ten years, have attempted to evaluate the roles of surgery and interstitial and external radiation in the treatment of cancer of the tongue. He states, "External radiation therapy is but slightly effective in destroying and retarding the squamous-celled epidermoid carcinomas of the tongue and consequently can only be relied upon to supplement other therapeutic means. Of course, the successful treatment of lingual cancer depends also on the proper management of metastases in the regional lymph nodes, yet if surgical dissection is planned it must be preceded by treatment of the primary cancer in the tongue." I feel strongly that this last statement should be qualified to fit a certain group of cases, to-wit: The surgical dissection must be accompanied by treatment of the primary lesion.

Reports of unrelated groups by clinics throughout the country indicate a five year cure rate of from 20 to 30 per cent. The 1931 Curie Institute of Paris report is indicative of the relation of clinical

progress upon admission to curability:<sup>1</sup> (1) carcinoma limited to the tongue and not over 2 cm. in diameter, 60 per cent clinically cured; (2) carcinoma involving not more than one half of the tongue, 30 per cent clinically cured; (3) involvement of both sides of the tongue by carcinoma, 10 per cent clinically cured.

Of course the Curie Institute report does not consider the metastatic zone in relation to curability, and it should be emphasized that a small lesion of the tongue with questionably operable metastasis offers a less favorable prognosis than a lesion larger than 2 cm. in diameter with no palpable nodes in the metastatic zone. The evertting cauliflower lesion may involve half the tongue before metastasis occurs; it is of a low grade type and occurs more commonly in the anterior two thirds and edge of the tongue. The infiltrating type is of a higher grade histologically and occurs more commonly on the posterior third and at the mucosal reflexion. The first symptom noticed by the patient with this type may be enlargement of nodes in the metastatic zone.

In this same text,<sup>1</sup> in the chapter "Surgical Treatment of Cancer of the Tongue," Livingston and Lieber conclude in part with, "No variety of neoplastic disease demonstrates more clearly than does lingual cancer the mutual limitations of all types of treatment now in use. Cancer of the tongue no longer falls within the exclusive domain of either surgery or radiation therapy."

In the chapter "Neck Dissection for Metastatic Carcinoma," E. J. Bartlett states, "Failure to cure in carcinomas that metastasize to the neck is due to an inability completely to encompass and eradicate the local lesion. Except in the most advanced and, therefore, inoperable carcinomas which metastasize to the neck, a neck dissection such as described solves once and forever the spread of the disease to distant parts."

In the editorial note by Pack and Livingston which follows this chapter, they discuss the sequence of treatment of primary and metastatic carcinoma in cervical nodes. In part they state, "The order of treatment of the primary intra-oral cancer and the involved lymph nodes is not an indifferent matter. Neck dissection should never precede treatment of the primary cancer. After such a dissection lymph drainage from the cancer continues and cancer cells are often discharged into the healing wound where they are not restrained as in the filters afforded by lymph nodes, but grow diffusely throughout the subcutaneous wound."

It is my experience that this diffuse growth throughout the subcutaneous wound is a most infrequent occurrence and occurs only in the anaplastic cases. It is true that lingual cancer rarely metastasizes below the clavicle, but in the hopeless group rated as 32 per cent in the Barnard series the cases are inoperable mainly for two reasons: first, the wall of the carotid artery (common, internal or external) is involved by carcinoma; second, the

<sup>1</sup>From the Barnard Free Skin and Cancer Hospital, St. Louis.

tissues between the tongue and metastatic zone are invaded, many of these invasions appearing as a direct extension from primary to secondary zone rather than a metastasis. It is particularly in these cases that even the combination of surgery, interstitial radium and x-radiation is unsuccessful in encompassing the malignant tissue.

In regard to the sequence of treatment of the primary tongue cancer and the cervical nodes, control of the primary lesion first is the treatment of choice. However, there is a definite group of cases presenting a local lesion with reasonable expectancy of control and a definitely involved metastatic zone which is operable. The metastatic zone will become inoperable even during interstitial or x-radiation therapy to the area if one waits for indications of control of the primary lesion.

James Duffy, in discussing indications for neck dissection and for irradiation of cervical nodes in intra-oral carcinoma, has made a significant comparison relating to the cervical nodes which can be applied to the metastasis from tongue cancer. In a group of seventy-eight patients who had operable metastatic carcinoma in lymph nodes on admission, or developed operable metastases in nodes after admission, thirty-eight were treated by irradiation and in forty neck dissections were done. The five year survival in the irradiated group was 10.5 per cent and in the neck dissection group 22.5 per cent.

As Duffy points out, the mortality from neck dissection is not high. In this series it was 2.1 per cent, or one case, and this case had a partial glossectomy at the sitting and died from a postoperative pneumonia.

Prophylactic neck dissection is not indicated, i. e., neck dissection should not be done on a patient with carcinoma of the tongue when lymph nodes are not palpable. Duffy's statistics at Memorial Hospital show that of the whole group of intra-oral carcinoma 70 per cent were admitted without palpable or carcinomatous lymph nodes, 12 per cent had operable lymph nodes containing carcinoma and 15 per cent had inoperable carcinomatous nodes. In the whole group 27 per cent had or developed operable metastasis. If a neck dissection had been done on all except the inoperable group there would have been 1,158 surgical operations, of which only 27 per cent would have been of value in the ultimate result. Cancer of the different regions of the mouth shows varying percentages of freedom from metastasis. In the Memorial Hospital series intrinsic larynx carcinoma was the highest as 94.8 per cent of these patients showed no metastasis in nodes on entrance and never had metastasis in the cervical nodes. The tongue series was the lowest with 60.3 per cent freedom from metastasis.

This whole group, and particularly the tongue series, is a much more hopeful group as compared with the patients at Barnard Hospital. Sixty-two of these 108 cases, or 57 per cent of the Barnard

series, had definitely enlarged and firm lymph nodes upon admission to the clinic and showed gross and histologic metastasis.

The average age of patients in the Barnard series was 56.3 years, the two extremes being 24 years and 83 years, the majority varying between 50 and 60 years. In order to evaluate therapy properly, age was not considered as a factor in adjudicating probable curability.

The average duration of symptoms was five and one half months, the shortest one month and the longest three years. The greatest number varied between three and seven months. These symptoms are detection of the ulcer or mass by inspection, smarting or burning on intake of certain foods (spicy in particular) or bleeding.

In this series an analysis of a few main groupings will demonstrate more particularly the effectiveness of the methods of treatment. Surgery of the local lesion was done in twenty cases. One of these showed recurrence histologically. Recurrence occurred in nine cases and there were eight post-operative deaths. In the three five year cures obtained radon had been used to the lesion and recurrence suspected. Radon alone in the tongue was used in sixty-four cases. Thirty-nine, or 45 per cent, presented no recurrence for a minimum of five years. Thirty-five, or 55 per cent, did not regress or developed recurrences.

Roentgen ray therapy to the tongue in seven cases produced partial regression. In fourteen cases, in which x-radiation was used alone to the lymph nodes or following dissection, no cure was obtained. Radium cells were used in the tongue in three cases and into the metastatic nodes in four cases with incomplete regression. The use of radium cells in other metastatic masses throughout the body has not been of great benefit from the curative standpoint in the experience at Barnard Hospital.<sup>2</sup> Radium cells into the tongue are uncomfortable and because of the necessary mobility of the organ they shift from their original position considerably during the six to seven days they are to remain in place.

In addition to the high operative mortality as the result of partial or complete resection of the tongue, the proneness to recurrence, particularly in the posterior third, accounts for the general abandonment of surgical ablation of the primary carcinoma of the tongue, either by partial, hemiglossectomy or complete glossectomy.

The structure of the tongue may account for these factors. The lymphatics are very numerous; they originate in an extensive network in the submucosa and in a smaller network in the muscle substance.

As to the metastatic zone, the lymphatics of the anterior portion of the tongue drain into the submental and submaxillary nodes and into the upper deep cervical chain. From the margins and dorsum of the tongue behind the apex and extending back to the vallate papillae, the lymph vessels pass to the submaxillary and upper deep cervical nodes.

The lymphatic system from the base of the tongue drains into the deep cervical group. Also in the posterior third of the tongue there is a decussation of the lymph paths so that both sides of the lymph node groups drain this portion.

It is evident that the most important group of lymphatics is the deep chain about the internal jugular vein and posterior to it, from the jugular fossa above to the clavicle below. The resection of lymph-bearing tissue necessary, regardless of position of the lingual cancer in its anteroposterior relationship, is the complete dissection of the affected side. This embraces section of the sternomastoid muscle and jugular vein at the clavicle, removing the carotid sheath and all cellular tissue from this point upward to the jugular fossa.

Certain cases present findings of particular importance. One case in this series had a clinical and histologic recurrence of squamous-celled carcinoma, grade II, eight months following radon seed insertion, the original lesion measuring 2 cm. in diameter. The radiated and recurrent area was excised. Two years following this the jugulodigastric lymph node of the same side definitely enlarged and became firm. Neck dissection was done. This node and others in the jugular chain showed metastasis histologically. The patient is free of recurrence five years following dissection.

Another striking case in this group was a patient aged 52 years who presented a carcinomatous ulcer involving the lateral posterior margin of the tongue, extending to and involving the anterior tonsillar pillar, tonsil and soft palate. Twenty-six and a half millicuries of radon were inserted. Recurrence in the parotid region over the mandibular ramus occurred two years later. The parotid salivary gland and parotid lymph nodes were not involved. Mandibular hemisection and complete neck dissection were done and the patient shows no evidence of recurrence five years later. This was a grade II squamous-celled carcinoma.

In four instances recurrent lesions in the local area following radon insertion in from six months to three years were reradiated with radon and no further recurrence has occurred. Recurrence in the tongue following radon has occurred as late as four years, this type of recurrence to be considered as different from border extension.

Thus, in regard to control of the local lesion before neck dissection, each individual case must be considered in the light of its particular setup. Some cases come under observation with a local lesion in which satisfactory results may be expected with a metastasis that is operable. The neck dissection and the radon insertion to the local lesion should be done at the same sitting in this type of case. If one waits three months or six months in this type of case to determine controllability of the local lesion, the metastatic zone will be inoperable. It is to such a metastatic zone that the failure of x-radiation to even hold in check or inhibit extension of the metastatic process has been most dis-

appointing. Except in the most anaplastic cases x-radiation is of no value; in fact, it is often a deterrent in these cases. The local and general effects of x-radiation will necessitate postponement of the neck dissection without inhibiting the neoplastic process and the case will become inoperable.

In a closer study of the "radon cure" group, 35 per cent had neck dissection. In other words, 65 per cent of the "cured group" came to observation and treatment before metastasis had occurred.

This group of 108 cases was from the ten year period between 1927 and 1937. In the first half of this period hemiamputation and total amputation of the tongue was practiced in the then considered operable cases. In the second half of the period the radon seed or radium cell was always used in the local lesion. Five cases from private practice were added in the year 1937, mainly to compare findings on admission to private practice with those admitted to the clinic. In this group three cases did not present palpable lymph nodes, the tongue lesion completely regressed following radon implantation and no evidence of recurrence or metastasis has occurred since. Two cases developed palpable and enlarged nodes two months and five months later, respectively, following implantation of radon seeds into the tongue. Complete neck dissection of the affected side was done, and histologic metastasis was found in one. No evidence of further metastasis or recurrence has been noted. The average period of noting symptoms in this private group was four months as compared to five and one half months in the clinic group. None of these cases should be considered hopeless as compared to 32 per cent of the clinic group. The average age of this group was 57 years as compared to 56.3 years in the clinic group.

The lesson to be learned from this group and from the "cured" clinic group is the tremendous importance of early recognition and treatment of tongue carcinoma. Ten cases, or 9 per cent, of the clinic group have not developed cervical metastasis. In the private group 80 per cent have not developed metastasis.

The tongue seems particularly suitable for implantation of radon seeds and unsuitable for the removable radium cell or needle. It is not particularly suitable for radium application with the mold or intra-oral x-radiation.

To the contrary, radiation has proved disappointing as a curative measure to the lymph nodes of the neck (the metastatic zone). Neck dissection (resection of the lymph-bearing tissue) is the treatment of choice for probable and operable metastasis from cancer of the tongue.

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## TUMORS OF THE BRAIN

## CASE REPORT

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Although space does not permit us to give the details of the diagnosis of tumors of the brain, there are several pertinent facts that should be mentioned. The purpose of this paper is to call the attention of the general profession to the fact that there are diagnostic procedures available which will help in making a diagnosis of tumors of the brain early enough to justify surgical intervention.

As is true with all patients, the first requisite in taking care of this type of individual is to obtain a careful history, preferably in chronologic order. Symptoms which may have little or no significance to the patient may be of the greatest value in localizing the condition. Headache, vomiting and failing vision are time-honored symptoms whose importance cannot be stressed too much. An expanding lesion within the cranium seldom is found without one of these symptoms being present. Occipital headaches are particularly suggestive and may be the only lead to a cerebellar tumor. Convulsions at any age should lead one to think first of tumor and then of other possibilities. Double vision leads many a tumor patient to seek medical aid. Other visual disturbances may be the first to warn the patient that something is wrong. Blurring of vision, scotomata and large field defects may be described.

After a careful history has been taken, complete neurologic and general physical examinations should be made. Some tumors present many signs, others present but few. The importance of certain objective signs should be stressed. Papilledema, cranial nerve palsies and definite motor weakness never should be considered unimportant. Signs of upper motor neuron disturbances, i. e., hyperactive reflexes, pathologic toe signs and absent abdominal reflexes, are all objective signs of great importance. Sensory findings, however, are at times difficult to evaluate because of their necessarily subjective character.

A careful visual field examination should be made in every instance in which a brain tumor is suspected. A rough visual field examination may be made by confrontation and in many instances this will be sufficient to make a tentative diagnosis of the location of a tumor. These rough field examinations always should be checked, however, by a carefully done visual field examination.

Roentgenograms of the skull are essential but there is no need to take from fifteen to twenty plain pictures of the skull in different positions and exposures. A plain stereoscopic view of the skull

usually will give all the information that can be obtained from such films, i. e., the presence or absence of pressure markings. In about 4 per cent of cases of brain tumors plain roentgenograms demonstrate calcification which definitely will make a diagnosis. Erosions of the sella turcica are demonstrated easily. In lesions of the cerebellopontine angle and, particularly, in tumors of the eighth nerve, anteroposterior films of the skull taken in the Towne position are often of value in disclosing erosions of the petrous portion of the temporal bone.

The next time-honored subject, which comes to mind, concerns lumbar punctures in patients suspected of having brain tumors. There is no quicker way to get into trouble than to do lumbar punctures indiscriminately on brain tumor patients, whether or not a manometer is used. This point has been stressed for many years but one still sees many of these patients each year with signs of brain stem compression following lumbar puncture. It seems to be a reflex kind of action that when a lesion of the central nervous system is suspected the next car in the train of medical thought usually bears a lumbar puncture needle. Most of the difficulties involved could be obviated easily if the eyegrounds were checked by a competent observer. In the presence of papilledema, a lumbar puncture is a dangerous undertaking. The same is true in patients with a slow pulse, elevated blood pressure and double vision. The occurrence of papilledema associated with central nervous system syphilis is extremely rare, and this is one of the few justifications for doing a lumbar puncture in the presence of papilledema. Furthermore, the number of deaths following spinal puncture in the presence of increased intracranial pressure is far greater than is ever published. The value of intracerebral spinal pressure reading is doubtful. It has been our experience that the normal spinal pressure varies from 50 to 200 mm. in a water manometer.

The general medical public still views pneumo-ventriculography with a great deal of misgiving. No single diagnostic procedure has so altered a surgical specialty as has this one. The high incidence of positive results in patients with brain tumors has made the procedure almost indispensable to the neurosurgeon. The mortality is about .5 per cent, that is, of any minor surgical procedure. These examinations are done under avertin and local novocain anesthesia. Most patients experience a severe headache during and following the procedure if performed under local anesthesia alone. Roentgenograms are taken in various positions after the fluid in the ventricles has been removed and replaced by a gas. We are certain that twenty years ago, when retrograde pyelography was relatively new, the genito-urinary surgeon must have faced the same problem which we do today. Retrograde pyelography, regarded almost indispensable today, was viewed with great misgiving at that time. We, therefore, make a plea for

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Sarcoma of Brain with Extension through Bone, Muscle and Skin.



wider use of ventriculography as a valuable diagnostic aid.

Barany tests and hearing tests when performed by competent otolaryngologists may be of considerable value in making the diagnosis of tumors of the eighth nerve and other lesions in and about the brain stem. Electro-encephalography bids fair to be a valuable adjunct to intracranial diagnosis. With all these advances, which have been made in neurosurgery in the last twenty years, brain tumor surgery still has its surprises and its heartaches.

#### REPORT OF CASE

A. R., white male, aged 20, was referred by Dr. A. M. Frank, St. Louis. For about one month previously this boy had had extremely severe generalized headaches. One week previous to the onset of the headaches, he suddenly had become dizzy and had fallen down a flight of five steps. Unconsciousness lasted for about five minutes. The next complaint was that of weakness but the patient continued to work every day until his admission to Lutheran Hospital, St. Louis, on April 3, 1938. Almost continuous vomiting had ensued during the day previous to entry into the hospital. The eyes caused no difficulty until the day before hospital admission when double vision was noticed. Neurologic examination at that time showed bilateral papilledema with hemorrhages and exudate. Speech was slurred. There was a right central facial palsy. The right arm and leg were markedly weaker than the left. There were diminished reflexes on the right. A ventriculogram followed by craniotomy was advised.

#### OPERATION

On April 5, 1939, a ventriculogram was done through the left posterior horn and 25 cc. of fluid was removed and replaced with the same amount of air. The air plates showed a large tumor in the right parietal region. Patient was returned to the operating room. Under tincture of metaphen preparation, ether and  $\frac{1}{2}$  per cent novocain anesthesia, a flap was turned down over the right parietal region. The dura was very tense. Ventricle puncture was attempted without success. The dura was opened with base toward the longitudinal sinus and a large tumor about the size of a tennis ball was found to be impinging on the motor cortex. This tumor was well encapsulated and attached to the dura. The arterial and venous blood supply was coagulated and the tumor was removed in toto. Bleeding points were controlled by coagulation. The wound was closed with silk. Silver foil, gauze and crinoline dressing was applied. The postoperative course was uneventful. The patient was up in a chair on the ninth postoperative day and was discharged on April 17, 1938.

At that time there was some difference of opinion as to the pathologic picture involved. The tumor was thought by some to be a meningioma because of its location and its attachment to the dura. It was thought by others to be a metastatic carcinoma. A final decision was not made at that time. On July 5, 1938, the patient had a focal convulsion involving the left arm and left side of the face. There was continued weakness of the left arm and leg. On October 28, 1938, he was admitted to the hospital because of vomiting, diplopia and headache. The weakness of the left arm and leg had become more pronounced. Examination at that time showed the left pupil to be slightly larger than the right and to react more sluggishly to light. The optic disks showed a much more marked degree of choking than on previous entry. The left arm and leg were flaccid and weak. Movements of these two extremities were jerky, incoordinated and poorly sustained. The tongue deviated to the left. The pulse was very slow but regular; respira-

tion was regular. There was a slight hypesthesia on the left side of the body. Temperature sensation was intact. No ankle or patellar clonus was noted; there were no pathologic toe signs. It was thought that the tumor had recurred. An air injection and craniotomy were done.

#### OPERATION

Air injection was carried out through the right posterior horn. About 15 cc. of fluid was removed and replaced with air. Air plates showed an enormous recurrence of tumor on the right. The patient was returned to the operating room and under ether and  $\frac{1}{2}$  per cent novocain local anesthesia the old flap was reopened. An enormous tumor was encountered lying over the arm center and extending forward into the frontal lobe. The tumor had invaded the temporal muscle on the right. It was attached to the dura at about the same point as its predecessor. The tumor was removed and bleeding was controlled. A large subtemporal decompression was done. The wound was closed with interrupted silk sutures in the usual manner. Patient had a somewhat stormy convalescence but left the hospital on December 7, 1938.

By June 8, 1939, the patient was beginning to fail rapidly. There was deafness on the right side and a lump appeared externally just beneath the right ear. By August 4, 1939, the patient was practically blind and had retention of urine. He was readmitted to the hospital on August 7, 1939. At that time the right side of the face and neck was swollen and discolored and there were many nodules and lumps in and directly under the skin. These were soft blue in color and moderately tender. The right eye was swollen shut; the extremities were paralyzed completely on the left side, associated with severe headache. After a few days, the involved skin began to ulcerate, the ulcerated area becoming more extensive during the subsequent course of the patient's illness. (See color photograph.) Symptomatic treatment was instituted. At first codeine and phenobarbital were given for the control of pain and restlessness. It was soon necessary to administer morphine more and more frequently. About September 1, 1939, morphine, grains  $\frac{1}{4}$ , was required every two to four hours for relief. After a few days, this dose was increased to  $\frac{1}{3}$  grains, to grains  $\frac{1}{2}$ , and then to 1 grain. This failed to give any relief so morphine,  $\frac{1}{4}$  grains, was given intravenously. After this measure, he slept quietly for about twelve hours without any untoward reaction. At that time he was also receiving phenobarbital, grains  $1\frac{1}{2}$ , three times daily. It was necessary to increase the intravenous dosage of morphine to grains 1, 2 and finally to grains 3. When this failed, sodium amylal, grains  $7\frac{1}{2}$ , was given intravenously. Tolerance to this drug was acquired rapidly necessitating its administration from two to three times daily. By that time it was necessary to administer medication not so much for the control of pain as for the purpose of keeping the patient quiet. When not narcotized he would yell, break the glassware on the table and create a general disturbance. The amounts and kinds of drugs were increased gradually until on October 3, for example, he received  $17\frac{3}{4}$  grains of sodium amylal intravenously, morphine grains 3 by hypodermic, morphine grains 5 intravenously, evipal grains 15 intravenously and 20 cc. of paraldehyde per rectum, all in a space of twenty-four hours. From 12:30 a. m. of October 4 to 9:30 p. m. of October 5, the time of expiration, the patient received 48 grains of sodium amylal intravenously 10 grains intramuscularly and 9 grains per rectum. He also received 12 grains of morphine hypodermically, 15 grains of evipal intravenously and 40 cc. of paraldehyde per rectum. On October 1, the temperature started to increase. On October 3 it was 101 F., on October 4 102.4 F., and shortly before death at 9:30 p. m., October 5, it was 108 F. degrees. Permission for postmortem examination was not granted.

This case report is presented because of several rather interesting facts. First of all, there have been many opinions regarding the type of tumor which was removed. It finally has been decided to name it sarcoma of the brain because of its histologic makeup and its life history. The tremendous amounts of medication used in the last stages of this patient's existence were astonishing. Last and most important, this case emphasizes the fact that even with apparently complete removal of a brain tumor the results may be disastrous, as in this instance.

4952 Maryland Avenue.

## MISSOURI STATE CANCER HOSPITAL NO. 2: A GROUP CLINIC

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AND

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The State Legislature of Missouri voted an appropriation at its biennial session in 1937 for the construction of a state cancer hospital and the establishment of state cancer clinics for the care of indigent cancer patients. This appropriation was matched with federal funds and the Ellis Fischel State Cancer Hospital at Columbia was planned and built by a Cancer Commission appointed by Governor Stark.

Dr. Ellis Fischel was the chairman of the first commission and to him must be given the credit of initiating the state plan including the construction of Missouri's new cancer hospital at Columbia. This hospital justly carries his name as a memorial and tribute to his unstinting effort and determination to care for the indigent cancer patient properly. He unfortunately was killed while motoring to Columbia for a cancer meeting in 1938.

Before the state hospital at Columbia could be completed, two cancer hospitals were established at Fulton and St. Joseph with the aid of the State Eleemosynary Board who offered facilities in the two large state hospitals. Colonel Ed Jameson, Chairman of the Eleemosynary Board, was extremely helpful in getting these hospitals started.

Dr. Fischel met with a committee of the Buchanan County Medical Society in St. Joseph relative to the organization of State Cancer Hospital No. 2. Following a hospital inspection, a top floor of one of the new state hospital buildings was turned over to the Cancer Commission. It consisted of two wards of thirty beds each with four private rooms connected with each ward. There were also a kitchen, dining rooms, utility rooms, record room, library and minor surgery dressing rooms. The resident quarters were also on this floor. Two large sun porches were connected with the floor where beds could be wheeled outdoors. The fully equipped surgical division with surgical nurs-

ing service of State Hospital No. 2 was placed at the disposal of the Commission. The pathologic laboratory of State Hospital No. 2 was made available. The radiologic department of State Hospital No. 2, with its new deep therapy machine, as well as the necessary radium, was used for the Clinic.

The Clinic was opened May 1, 1938, and closed September 13, 1939.

### ORGANIZATION OF CLINIC

St. Joseph and Buchanan County have a population of about 90,000. The Buchanan County Medical Society has an average membership of about 110 physicians. Practically all of the medical specialties are represented in its membership. Therefore, the committee in charge of the hospital felt that a well balanced staff could be put in charge of this hospital, giving each man or group of men a special field of cancer or an anatomic division of the body to care for.

The director served for a one year term. The first director was F. Gregg Thompson, M.D., and the second, Gaylord Bloomer, M.D. The one year term was deemed necessary because the direction of such a clinic entails considerable effort and time and, although a salary was paid the director, the salary was turned over to the County Society for scientific and charitable purposes. No other medical staff members received pay except the radiologist, the resident and the pathologist. The staff was as follows:

Director, F. Gregg Thompson, Jr., M.D.

Assistant Director, Gaylord T. Bloomer, M.D.

Resident, F. C. Long, M. D.

### Committees

Blood neoplasm, H. W. Carle, M.D.; T. L. Howden, M.D.; E. M. Shores, M.D.; L. H. Fuson, M.D.  
Neurologic, J. H. Ryan, M.D., C. S. Grant, M.D.  
Skin, A. J. Smith, M.D.

Breast and chest, S. E. Senor, M.D., Cabray Wortley, M.D.

Gynecology, L. Paul Forgrave, M.D., Matthew H. Talty, M.D.

Gastrointestinal, H. K. Wallace, M.D.; W. T. Elam, M.D.; Ralph Byrne, M. D.

Genito-urinary, Charles Greenberg, M.D., J. J. Bansbach, M.D.

Bone, G. T. Bloomer, M.D., Jacob Kulowski, M.D.

Eye, Robert S. Minton, M.D., L. J. Ferguson, M.D.  
Otolaryngology, O. E. Whitsell, M.D., Francis J. Berney, M.D.

Head and neck, F. Gregg Thompson, M.D., William Redmond, M.D.

Radiology, James O'Donoghue, M.D.

Pathology, W. J. Hunt, M.D.

### NUMBER AND TYPES OF CASES TREATED

Two hundred and thirty-four cases were admitted for diagnosis and treatment.

A detailed chart showing names of patients,

county residence, date of admission and discharge, diagnosis, type of treatment and results was kept in the clinic staff room in addition to complete clinical charts. This chart is too bulky to present here but a summary of case diagnoses is listed.

Sarcoma of leg, 1.

Nonmalignant cases, so diagnosed, 50.

Carcinoma of mandible, 1.

Carcinoma of breast, 27.

Epithelioma of skin in various parts of body, including basal cell carcinoma and epidermoid carcinoma, 48.

Carcinoma of vagina, 1.

Epithelioma of lip, 17.

Hodgkin's disease, 2.

Rodent ulcer, face, 1.

Melanoma, 1.

Pigmented mole, 1.

Carcinoma of thyroid, 2.

Carcinoma of body of uterus, 9.

Carcinoma of cervix, 23.

Carcinoma of stomach, 6.

Carcinoma of prostate, 5.

Hypernephroma, 1.

Myeloma, 1.

Carcinoma of rectum, 6.

Embryoma of testicle, 1.

Sarcoma of femur, 2.

Carcinoma of tongue, 3.

Carcinoma of bladder, 2.

Carcinoma of palate mucosa, 2.

Carcinoma of antrum, 2.

Giant cell tumor of leg, 1.

Carcinoma of cecum, 1.

Carcinoma of sigmoid, 6.

Carcinoma of liver, 1.

Bronchiogenic carcinoma, 2.

Carcinoma of esophagus, 2.

Carcinoma of ascending colon, 1.

Carcinoma of transverse colon, 1.

Carcinoma of larynx, 2.

Mediastinal tumor, 1.

Osteosarcoma of humerus, 1.

The total hospital mortality was twenty-five cases or 10.6 per cent.

One cannot help but be impressed by the number of nonmalignant cases presenting themselves for treatment. It is felt that most of these cases could be weeded out by branch clinics and thus save the public purse transportation charges along with hospitalization costs. The same would be true of the hopeless cases for which no relief could be given.

#### DIFFICULTY IN EDUCATING THE PROFESSION AND PUBLIC

Much effort has been made to educate the public and disseminate accurate knowledge in regard to cancer but the average layman knows little about the subject. The American Society for the Control of Cancer has done excellent work, especially among the women of this state; but in spite of this

numerous advanced cases were received for treatment in the hospital.

The medical profession should be on the alert and it was learned from bitter experience that doctors should not wait for lumps or tumors to grow or for chronic ulcers to develop. What are they waiting for? Case histories at the hospital show they were waiting for cancer to become hopeless. These cases must be diagnosed and treated immediately. This also brings up the question of "waiting lists" in cancer hospitals which will be discussed later.

#### CENTRAL HOSPITAL VS. BRANCH CLINICS IN STATE HOSPITAL

All workers engaged in the care of the indigent cancer patient have or should have one object in view and that is the best treatment of the greatest number of patients at a reasonable cost to the state.

Whether the fulfillment of this object can be accomplished best in a central hospital or in branch hospitals is open to argument. One thing of which we are sure is that an eighty bed hospital in the center of the state will not care for the indigent cancer problem in the State of Missouri and attain the object mentioned. It may and probably does take care of the rural population in the center of the state but a glance at its admissions fails to show a proportionate share of patients from the larger cities and if these were sent to Columbia it would be impossible to care for them. One might say that these patients are well cared for at home in the big cities but, after all, the whole state is paying for the upkeep of the central Cancer Hospital under the present setup; and efficient social service workers will find and already have found that their cities and counties can treat the cancer patient cheaper at the present rates in the Cancer Hospital in Columbia where the state pays most of the bill than in their own private and public hospitals where they pay all the bill. Thus, there is the unfortunate situation of a cancer patient placed on a waiting list at Columbia rather than being treated properly and quickly at home because of financial reasons.

Another problem is that of nonmalignant tumors such as fibroids and fibromas. Any cancer clinic must see a certain number of these and rule them out. If one adheres closely to the letter of the law and the word "malignant," such cases should not be treated in a public cancer hospital. On the other hand, some growths are definitely precancerous or borderline and must be destroyed; in fact, many believe this to be the greatest boon to the patient in the present state of cancer therapy.

Then comes the important question of the treatment of hopeless cases versus the treatment of curable cases. The policy of the hospital at St. Joseph, and the policy of the hospital at Columbia as it is understood, is to treat the patient if one thinks he can give relief, even if only pain is relieved and the growth is hopeless. Experience at State Hos-

pital No. 2 would confirm this as a good policy but it takes up valuable bed space and we believe that the patient should be removed from the hospital as soon as the required treatment is finished. We feel that considerable relief was given numerous patients. A good many ulcerating lesions were removed surgically with grateful appreciation of the patient.

#### RESEARCH

The question of research is important in any cancer program but, in the present state of knowledge, we feel that first class research of the basic problems is definitely not in the field of the good clinical worker. We know it would be impossible for one or a small number of individuals to attain operative skill in the various regions of the body and, at the same time, do physical and chemical research along with experimental work in radiology. We believe that true progress in cancer research will occur in large concentrated cancer centers with the necessary funds to support the coordinated work in the special fields. The present set-up does not fulfill the necessary criteria and, if the state wishes to turn the present hospital into a research institution, it certainly could not take care of the clinical cancer problem in the state.

After mentioning some of the myriad problems that a cancer hospital has to consider, we wish to state that we think other centers should be established in the state for at least the diagnosis and classification of cases if not for their treatment. These centers could be established by the Cancer Commission at conveniently located state hospitals and city hospitals and could work in conjunction with the central hospital at Columbia.

We are sure their support by the Cancer Commission would stimulate interest in their respective localities, both from the laity and medical profession.

They need not make provision for bed patients, at first, but our experience in Northwest Missouri leads us to believe that our cancer census would double and that, while many precancerous lesions would be eliminated thus relieving a later cancer case load, we probably could not handle all the cases at the central hospital.

#### PRESENT STATE HOSPITAL

From personal observations, we are of the opinion that the cancer hospital at Columbia is efficient, both in its management and clinical work. It is fortunate to have the members of the profession and the faculty of the State University Medical School, in Columbia, as consultants for immediate use.

We wish to urge the present Cancer Commission and later cancer commissions to provide adequate remuneration for the clinical physicians at the hospital so that a frequent turnover of staff members will not occur. Our experience leads us to believe that good cancer work can be done only by men experienced in their specific fields and we know that such good treatment can be attained in any

center providing the men have the opportunity to see and treat repeatedly cases in their particular sphere of cancer.

#### CONCLUSION

1. A history of State Cancer Hospital No. 2 is given.
  2. Medical organization of the hospital is described.
  3. A summary of cases is listed.
  4. Aspects of cancer hospitalization in Missouri are discussed.
  5. Establishment of branch cancer clinics is urged.
- 825 Charles Street.

### THE CANCER PROBLEM IN MISSOURI

DUDLEY A. ROBNETT, M.D.

COLUMBIA, MO.

The cancer problem in the State of Missouri should interest the members of the Medical Association and they should be vitally concerned with the care of indigent cancer patients. The first year's experience at the Ellis Fischel State Cancer Hospital has shown forcibly the extent of the problem. The report of the year's work by the resident staff to the consulting staff on May 11, 1941, convinced the latter conclusively of the splendid work being done in the institution and the large volume which has been done even in the first year of the institution when many administrative and organization problems necessarily were encountered. The hospital has been 90 per cent filled during the entire period and most of the time there has been a long waiting list of applicants. In addition, there has been a large number of ambulatory patients and regular clinics have been held where new patients and old patients are examined. The Cancer Commission and the resident staff of the hospital are extremely anxious to cooperate with the medical profession in the questions of admitting patients and in taking care of them during their stay in the hospital and after they are discharged. They feel that the medical profession in each county, by cooperation with the county court in that county and the hospital, could prevent the admission of patients who are not eligible. With the growth of the hospital, some organization must be worked out to facilitate the certification of patients and it is only logical that the medical profession should take this leadership instead of having this work directed by a social service department of the hospital or any other agency.

During the last year practically all county societies have appointed cancer committees. These committees should handle the problem in their respective counties and by cooperation with the county courts see that only indigent patients are certified; and, if in any case, a nonindigent patient should be admitted to the hospital, the committee could inform the Administrator and the situation

would be remedied. At the present time this problem is not so great but as the prestige of the institution increases there will be more and more demands for the admission of borderline cases.

In addition to the admission of only indigent patients, there is the problem of seeing that the proper type of case is admitted. It would facilitate the work of the hospital if a large number of patients who are not cancer patients were not certified because the examinations to exclude cancer in those cases are time-consuming and an unnecessary burden to the hospital. In addition, there is the question of finding the cancer case that should be admitted into the hospital and also in following up the patients who have received treatment. These problems could be handled by cancer clinics that are authorized by the same law under which the hospital operates. These clinics can be established by the Cancer Commission only when the medical profession of a community requests them. That and the requirement that the clinics be operated with the basic standards of the American College of Surgeons are the only restrictions. Cancer clinics should be established in a number of counties where the facilities permit. The scope of work in a given clinic would be a purely local matter. In some counties the clinics undoubtedly would limit their work to indigent patients; in others, the clinic might be available to any patient or any physician in the county.

In the last two years there has been a distinct let-up in the profession's interest in cancer programs and education. This work has been delegated in a large part by the profession to the Women's Field Army of the American Society for the Control of Cancer. The value of their work is shown definitely by the great increase in the number of visits to the Cancer Hospital and Clinic in the month or two following the annual activity of the Field Army.

A renewed interest in the cancer problem as a whole should be taken by the county societies. Certainly the problem is large enough that at least one society meeting a year should be devoted to cancer. At that meeting the members should be informed of the number of patients from their county who have gone to the Cancer Hospital, what their trouble was, what was done for them and their identity. This would keep each society in close touch with what is going on in their county and should prevent abuses that might develop.

16 South Tenth Street.

#### TREATING ARTHRITIS OF THE JAW

From rest of the jaw, massage after the application of a skin anesthesia and the application of heat, a good functional result may be expected in the treatment of the temporomandibular (temple and jaw) joint when it is involved in rheumatoid arthritis, Theodore B. Bayles, M.D., and Leslie A. Russell, D.M.D., Boston, report in *The Journal of the American Medical Association* for June 28.

## SPECIAL ARTICLES

### AMERICAN MEDICINE PREPARES

MORRIS FISHBEIN, M.D.

CHICAGO

Early in 1940 the House of Delegates of the American Medical Association was notified that the medical profession of the United States would be called on to provide medical officers for the selective service army. It was contemplated then to raise an army of 1,000,000 men; it is contemplated now to raise an army of 1,400,000 men. An army of that size requires 9,100 medical officers. In the regular army there are some 1,250 medical officers; and in the National Guard 1,000 medical officers. In the Medical Reserve Corps are approximately 13,000 physicians; it is maintained by even the most optimistic of major generals that at least one half of these men are overweight, if not otherwise disqualified. It is going to be rather difficult to derive from 13,000 physicians a total each year of 7,800 physicians to staff the selective service army. Perhaps the National Guard will not be depended on for its contribution of 1,000 physicians for more than the first year. It is estimated that not more than 37 per cent of the medical reserve officers will care to enlist for the succeeding year, or two years, or three years. The medical profession has what appears on the surface to be a well nigh unsurmountable task.

What are the resources of the medical profession of the United States and how shall it set about the task?

The first step was to prepare the names and qualifications of American physicians in such form that they might be readily available. But before that task was undertaken a special committee selected by the Committee on Medical Preparedness including the Chairman of that Committee, Dr. Abell, the Secretary, Dr. West, and myself, went to Washington for conference with the three Surgeon Generals of the Army, Navy and Public Health Service. That was on June 10, 1940. It was agreed that if the medical profession was to meet all the needs of the American people for medical care, the needs of the civilian population, of the army and navy and aviation, industrial medicine, and public health, the needs of education and the other medical needs that prevail, it would be necessary to have some agency that would attempt to coordinate these needs and find out exactly what would be required. The group was informed that it was the intention first to utilize the Advisory Committee on National Defense, a committee consisting of seven members, including Miss Harriett Elliott. That idea did not meet with the spontaneous approval of the group. Indeed, they expressed some doubt that any one

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Editor, *Journal of the American Medical Association*.

trained chiefly as dean of women in a university could meet the obligations for coordination. It was suggested that there be selected from the medical profession a suitable coordinator working with this committee to consider medical needs.

The Committee on Medical Preparedness met to consider the needs and adopted a resolution urging the maintenance of a continuous flow of medical education. A resolution was sent to the members of the Senate Committee on Military Affairs, members of the Cabinet, the President of the United States and anybody else who might be in a position to help. The indications now are that the Selective Service Board may, if it wishes to do so, defer a medical student, provided he maintains his standing in the school at a reasonably high level. However, I agree with Father Schwitalla that it is not safe to depend on that organization for a continuous flow of medical students. The profession will be in far better position if it can through legislation, perhaps a modification of the Murray bill, obtain action through the Congress of the United States which will insure continuity of medical education in this country.

There are in the United States at present about 179,000 physicians licensed to practice; there are approximately 145,000 physicians actually in practice. From medical student to physician is a long period. A physician usually is 30 years of age before he is established in practice. The selective service calls men from 21 to 35, so there are few physicians left from whom to choose. Moreover, the indications are that for some reason or other 65 per cent of physicians are married when they are 25 years of age, leaving a still smaller group to be drawn in the selective service.

Each year there are graduated from the medical schools of the United States approximately 5,200 doctors. There are between 22,000 and 25,000 young men in the medical schools who are learning to be physicians. Each one of that group must have an internship if he is to be qualified to serve in the army, or navy or in civic practice. There are approximately 900 hospitals in the United States which have been approved by the Council on Medical Education and Hospitals of the American Medical Association as suitable for training interns. The hospitals can use all the young men who graduate each year. Of the 5,200 graduating each year about 1,000, after finishing their internship, wish to proceed with a residency. There are now certifying boards in each specialty; one requirement is that the young man shall remain three years in residency. Therefore if the selective service draws any large percentage of interns from the hospitals, the attending men will have to go back to work.

The Army requires a high percentage of physicians to take care of its men compared with a civilian community. It is estimated that one physician is needed for every 750 people in civilian life; the Army requires six physicians for 1,000 men. It requires a large number of hospital beds for all the

men must be taken care of in hospitals. The medical department proposes to provide 50,000 additional beds. These hospitals will vary in size, but each will require a staff of specialists, including every one of the medical specialties excepting obstetrics. And some will need obstetricians!

The American Medical Association, recognizing these needs, has endeavored to make certain the continuation of medical education. The faculties in some medical schools have one and a half teachers for each student. I frequently have felt that I was being taught by one of those fractions. To find out whether that number of teachers is necessary, an endeavor was made to query each medical school, leaving it to the dean or to the members of the executive committee to select from the faculty those teachers that they considered essential in the teaching of the students. That list is now almost complete.

Early in the task, the Association was under the strange illusion that what it was doing would be particularly helpful to the United States Government and that the government would be highly appreciative of the assistance the Association was about to render. Therefore it was thought the Government would be helpful to the Association and give it what is called a "frank." When I consider the literature from Washington that falls on my desk every day under a frank, I wonder why it was so difficult, and indeed impossible, to get this frank. The American Medical Association at its own expense, which is in the tens of thousands of dollars, has prepared a punch-card system covering in eighty-two classifications every doctor in the United States. These cards contain a mass of information about physicians. An old country doctor was being shown through the offices and was shown his card. He looked at it and said, "—there are things on that card that even my wife does not know, and I have been a married man for over forty years." The information there is of tremendous value in any need that may arise. This punch-card system is gradually developing; in some states 96 per cent of the physicians are enrolled. It constitutes the most complete inventory of the medical profession of the United States that has ever been developed. It has proved helpful in another problem, that of selecting physicians to serve on selective service boards.

As soon as the selective service plan was announced it was pounced upon by some agencies as a new means of urging the campaign against social troubles of one kind or another. An attempt was made to use the enrollment of 16,500,000 young men as a means of demonstrating the incidence of venereal disease in the United States. It was contemplated that when the call went out for 16,500,000 young men to register, it would be simple to obtain blood for the Wassermann test. The proponents did not realize the glassware that would be required. There was not enough glassware available for the purpose. In the second place, who would do the

Wassermann tests and who would follow them up after they were done? This little project fell by the wayside! The chapter closed.

I say these things not in any attempt to depreciate the manner in which things have proceeded because they have proceeded satisfactorily. However, a democracy must show in times like these its ability to function effectively in comparison with the functioning of the totalitarian states. One of the purposes of this address is to indicate to the medical profession that—regardless of the difficulties under which it may be laboring, regardless of difficulties that may arise in the future in regard to the furthering of medical science—the continual maintenance in the United States of the devotion of the medical profession wholeheartedly and completely to the maintenance of America is fundamental to any other objective that it may have.

So things are moving along and the young men are in the army, in camps after being examined by the induction boards, and they are ready for service. The selective service boards now include neurologists and psychologists. It was realized soon after the World War, when it came to dealing with neuropsychiatric cases in the veteran hospitals, that many of these cases might have been avoided if such examinations had been made. Bear in mind, first, that the examinations of the examining boards today are far more rigid than in 1917. A far higher percentage of such men should be rejected by the boards than in 1917-1918. Almost immediately when the figures for rejections were available some people began to say, "We are a nation of physical weaklings." Fortunately, these statements were absolutely without foundation. In the first place, the figures available show definitely that out of 60,000 men in the area of New York the percentage of young men now being rejected, even with the much higher standards now prevalent, is far less than in 1917-1918. In 1917-1918 some 10 per cent were rejected because of conditions affecting the chest; under present requirements 6.4 per cent of those rejected are rejected because of conditions in the chest. In 1917, 6.4 per cent were rejected because of musculo-skeletal defects; under present requirements, 3.4 per cent are rejected. The figures are similar for practically every condition that can be studied by statistical methods. In fact, in relationship to only two conditions are the rejections higher than in 1917; one has to do with hearing, the other with teeth. The present examinations require that a young man have a reasonable number of teeth—I think six uppers and six lowers. During the Civil War a young man had to have good teeth because he had to pull off the firing cap with his teeth. In the World War a young man had to have good teeth because he had to pull the pin of a hand grenade that way. Under present conditions he must have good teeth in relation to a sound body, free from infection of the teeth, free from digestive disorders which are prone to be associated with diseases of the mouth. For that reason the stand-

ards have been set higher and the draftees must come up to these standards.

The American Dental Association appeared before the Committee on Military Affairs of the United States Senate in regard to conserving the dental profession in the United States. They have pointed out that there are approximately 62,000 dentists in this country, which is not any too many for 130,000,000 people. Reasonable efforts should be made to maintain a sufficient number of dental students in the United States.

One hundred induction boards with ten to fourteen specialists on each had to be set up and also advisory boards for the Selective Service of an additional thousand physicians.

In the meantime progress has been made in Washington. Now there is a committee consisting of Dr. Abell, Dr. Weed and the three Surgeon Generals. At first this Health and Medical Committee was attached to the Council on National Defense. They functioned satisfactorily. Then suddenly the Committee was placed under a new head. Paul V. McNutt was made coordinator for health, medicine, recreation, physical education and allied subjects. He has appointed a number of committees. The great trouble is to secure prompt action when it is necessary. Nevertheless, the profession is moving forward. One of the most progressive activities is the excellent functioning of the physicians in the Division of Medical Sciences of the National Research Council. There Dr. Lewis Weed has been able to direct a good piece of work having to do with the standardization of various military medical procedures. The committees are aiding the United States Army Medical Corps in the standardizing of vaccines against typhoid and diphtheria and the protection of camps against epidemic diseases. They are developing a considerable number of measures that are going to benefit the young men in the United States Army. Soon it was apparent, if the medical men in the United States were to keep abreast of the problems encountered by those engaged in warfare, it must carry out research projects. Today it is known that the chief difficulties in aviation are associated with the pilot. I could cite many incidents having to do with the failure of airplanes under certain conditions when a reasonable amount of research on the man piloting the machine would have made the difference between disaster and salvation of the airplane. One of the features of military medicine today is the use of blood plasma. Many thousands of quarts of blood plasma are used in the British Army. The United States Navy requires 50,000 quarts of blood plasma. Through research it must be determined whether other plasma may be used instead of human plasma. The medical profession of the United States must make itself heard if adequate support of scientific research is to be provided.

Recently there has come from Great Britain, from the British Red Cross to the American Red Cross, a request for one thousand physicians to aid

Great Britain. It has been agreed that all requests for medical assistance shall come from the British Red Cross through the American Red Cross. This request was for physicians for the army medical corps, for the flying corps and some for service having to do with the civilian British people.

Strange conditions have arisen. War changes natural conditions. Formerly Birmingham sought to get rid of smoke; now they develop as much smoke as possible as a protection against airplanes. In Coventry they were going to get the people out of basements. Today practically all the people have moved into basements, that being the safest place to live. War has changed the relationship between the medical profession and the civilian population.

Shortly the American Medical Association will meet in Cleveland. Unquestionably there will come before the House of Delegates many questions of importance on which I have not touched. The House of Delegates of the American Medical Association, representing the medical profession of the United States, is the only body authorized to speak for 119,000 physicians of this country. I am sure it again will pledge unreservedly to the Government of the United States every patriotic medical service that the medical profession can render to a free people.

535 North Dearborn Street.

## ROUND TABLE DISCUSSIONS

Round table discussions were conducted at luncheon meetings on two days of the Annual Session of the Missouri State Medical Association in St. Louis, April 28, 29 and 30, 1941. Guest speakers appearing on the scientific program of the Session answered questions presented at the discussions. Dr. Ralph A. Kinsella, St. Louis, and Dr. James E. Stowers, Kansas City, presided at the two sessions.

### PYONEPHROSIS

Question: On what basis can one explain the absence of hypertension in cases of bilateral chronic pyonephrosis with extensive renal destruction and marked reduction in phthalein output?

DR. CLYDE L. DEMING, New Haven: There are probably two factors. One is antibody development within the human organism, and the second would be that there is resistance enough left in the kidneys to produce reconstruction of some of the damaged renal epithelium.

Question: When should nephrectomy be performed?

DR. DEMING: When one kidney is practically destroyed and appears to be the factor in the development of hypertension. The opposite kidney must be able to function completely for itself and for its opposite fellow; in other words, a fully compensating kidney.

Question: Explain the mechanism of extremely

low blood pressure, 56/40, in advanced bilateral pyonephrosis. Have you used adrenal cortex in the treatment?

DR. DEMING: Such readings represent an extreme condition. Usually when the blood pressure is below 60 systolic there is cessation of renal secretion. Either the kidneys have been destroyed so extensively that pressor substances have not been developed, or the lesion has been of such long standing that antipressor substances have developed. Perhaps blood transfusion should be used in an effort to raise the blood pressure. I have not used adrenal cortex in such cases. The war has so changed things in the East that one does not experience such low blood pressures.

### CHEMOTHERAPY IN UROGENIC INFECTIONS

Question: Please discuss chemotherapy in urogenic infections.

DR. DEMING: Chemotherapy is a definite adjunct to therapy in urologic infections. The sulfonamides are probably the best urinary antiseptics to be had, yet they can not be called panaceas. Their use is attended by dangers unless extreme precaution is exercised in their administration. In general, a person with good functioning kidneys will tolerate sulfathiazole, 80 grains for two days, 60 grains for two days, 40 grains for two days and then 30 grains a day for two weeks if necessary. If there is diminished renal function, one must be cautious in the use of this drug. The rule by which one gauges therapy is to give as many grains per day as percentage of phenolsulphonphthalein secreted in a two hour period. If there is only 20 or 30 per cent of phenolsulphonphthalein secreted in two hours, then give 20 or 30 grains of sulfathiazole per day. Daily blood levels must be taken in all cases. The appearance of a few red blood cells or sulfathiazole crystals in the urine or a diminished outflow of urine should indicate a cessation of its therapy. Toxic symptoms represented by photophobia, conjunctivitis and rash do occur. Cases of complete anuria caused by plugging of the renal tubules have been reported.

### SPINAL CORD INJURY

Question: In cases of severe spinal cord injury resulting in acute urinary retention, what should be the first orders concerning the bladder and later investigation and management if the cord is severed?

DR. DEMING: What portion of the cord is severed is important. Usually one should not allow the bladder to become overdistended. Tidal drainage is instituted and urinary antiseptics are prescribed. If such a patient is not seen until the nonprotein nitrogen is elevated, a suprapubic drainage should be done at once. These cases are treated much as prostatic patients. Renal function, nonprotein nitrogen and infections always should be kept under control.

#### FOCAL INFECTION IN RHEUMATOID ARTHRITIS

Question: Dr. Cecil, please discuss further your idea of eradicating focal infection in rheumatoid arthritis.

DR. RUSSELL L. CECIL, New York: The trend of opinion now is strong against the theory that focal infections are responsible for rheumatoid arthritis and that their removal will cure the disease. Certainly in my experience, after analyzing 200 carefully studied cases, I was unable to demonstrate any relationship between focal infections, as such, to the disease, or any relationship between the removal of foci of infection and recovery from the disease. I urge, therefore, that foci in these patients not be removed with the belief that this will cure them. On the other hand, if the focus of infection is a real focus, if they have bad tonsils or sinuses or if they have root abscesses, these of course should be attended to to improve the patient's general health. They should be removed, even in a healthy person! I want to say again, however, that there is a form of arthritis rather suggestive of rheumatic fever in which there seems to be a definite relation between the disease and a preceding localized infection. It may be tonsils, kidney, pansinusitis or infection about the teeth or in the abdomen. One sometimes speaks of this type as "focal infection arthritis." I do not like the term but it conveys a definite clinical picture. There are no cardiac complications and the condition does not respond to salicylates; the prognosis is good. So I say that while focal infection is going out of style, it is not altogether a dead issue. It must be considered significant in a certain type of case.

#### GOLD THERAPY

Question: How soon may gold therapy be resumed, if at all, after skin reactions occur?

DR. CECIL: That depends on the character of the rash. If it is a transient erythema or urticaria, it is no contraindication to gold therapy. If it is a squamous dermatitis, it is necessary to wait until it subsides before giving any more gold, then resume it in small doses. The same is true of exfoliative dermatitis. I have had several cases in which the exfoliative dermatitis was pronounced and I stopped gold, and sometimes dropped it altogether because the patient refused to take any more. On the other hand, patients who develop dermatitis do well so far as the arthritis is concerned and some of them urge the continuance of the gold therapy, and in occasional cases I have resumed it without any serious consequences.

#### HEMORRHAGIC ASCITES

Question: How often is hemorrhagic ascites found in cirrhosis of the liver? Is the basis usually of adenomatous origin?

DR. CECIL: One practically never sees hemorrhagic ascites in cirrhosis of the liver except in a case in which there was some traumatic accident during paracentesis from the needle. In purpura

one might find it where the hemorrhage would be unusual. Adenomatous regeneration may occur in the liver and occasionally carcinoma develops, in which case there might be a really bloody ascites.

#### TOBACCO AND VASCULAR SYSTEM

Question: What is your opinion of the effect of tobacco on the vascular system?

DR. CECIL: The inhalation of carbon monoxide results in a tachycardia which persists for only a short time. Tobacco also stimulates the adrenals and raises the blood pressure. I think the consensus of opinion is that tobacco has little to do with the development of arteriosclerosis although it is well known that in people who have a tendency to angina, tobacco may bring on the symptoms. It also may produce pseudo-anginal symptoms.

#### SULFONAMIDES IN ARTHRITIS

Question: What, if any, is the place of the sulfonamides in the treatment of acute, subacute or chronic arthritis?

DR. CECIL: I would say practically no place except in gonococcal arthritis. But there are a few exceptions. Every once in a while one sees a case of acute or subacute arthritis in which the sulfonamides have been of real value.

#### FIBROSITIS

Question: What is the relation of the common cold to fibrositis?

DR. CECIL: That is an interesting question because one so often gets it after a common cold. Patients who have a severe cold, particularly in cases with sinus complications, may have muscular pains, sometimes pain in the joints, and even swelling. One might consider this I suppose as not due to the primary cold virus but to a secondary bacterial invader.

#### BACTERIAL ENDOCARDITIS

Question: What are the results of treatment of bacterial endocarditis by chemotherapy when it is due to the streptococcus viridans?

DR. CECIL: Bacterial endocarditis is incurable. I have never seen a cure, but I have seen several cases treated with one of the sulfonamides that have become temporarily free and in which the blood culture remained sterile for a considerable period of time; however, most of these patients have had a relapse. I have a case in which there are only one or two colonies in the blood, and I feel sure that while chemotherapy has stopped the progress of the disease temporarily, the bacteria will return later on. On the whole, I believe that chemotherapy is going to prove a disappointment in the treatment of this disease.

#### SPINAL CORD DAMAGE

Question: Discuss spinal damage in severe pernicious anemia. Does it recover under Minot treatment?

DR. CECIL: Spinal cord damage is permanent, of course, but liver extract unquestionably will prevent extension of the damage if given early.

#### UREA RETENTION

Question: Dr. Bodansky, please discuss the mechanism of urea retention in gastrointestinal hemorrhage.

DR. MEYER BODANSKY,\* Galveston, Texas: The extent to which various factors operate to contribute to this retention is still debatable. However, one may consider the following: (1) hemoconcentration, (2) renal impairment and finally (3) the possibility of the digestion of the hemoglobin and absorption of the end products. Various estimates of the amount of arginine in hemoglobin run from about 3 to 7 or 8 per cent. This amino acid is an important precursor of urea. In fact, I have made some preliminary experiments in which the administration of arginine has caused a considerable rise in the urea concentration of the blood. It therefore may be seen how the digested hemoglobin may provide a source of arginine, which in turn leads to an increased formation of urea.

#### RAT-BITE FEVER

Question: Is there anything new in the treatment of rat-bite fever?

DR. BODANSKY: I do not know much about the subject. My experience is limited to one case, a patient who apparently had been bitten by a rat on the ear. The case went on for several months and did not respond to any form of treatment until it was discovered that the spirilla of rat-bite fever was in a blood smear. I believe two or three administrations of neosalvarsan cleared up the patient's condition sufficiently to engage in further treatment.

#### OSTEOPOROSIS

Question: Of what value is phosphatase determination in senile osteoporosis? What is the treatment?

DR. BODANSKY: In senile osteoporosis the determination of plasma phosphatase is of no particular value in diagnosis; it is the roentgen ray which is of chief value in establishing the diagnosis.

The treatment to be followed, or perhaps favored, depends on what the pathogenesis of the condition is considered to be. Several groups of investigators have conceived osteoporosis to be due to a low calcium intake in the diet occurring over a span of years. The indicated treatment then would be to increase the calcium intake and indeed it has been shown in balance experiments that such an increase does lead to increased retention of calcium. So far as I know, however, these findings have not been made the basis of any extensive therapeutic procedure.

In connection with this subject one also might mention osteoporosis occurring in persons less than

65 years of age, and almost exclusively in women. This condition may be termed postmenopausal osteoporosis. Albright and his collaborators have shown that estrin therapy has a marked ability to put such patients into a positive calcium and phosphorus balance.

#### HYPO-ADRENALISM

Question: Please express your opinion of the laboratory aids used in the diagnosis of hypo-adrenalism, not true Addison's syndrome.

DR. BODANSKY: I presume you are using the term "hypo-adrenalism" to cover that condition in which the patient shows one or more of the following symptoms: he feels very exhausted, has low blood pressure, poor appetite and perhaps a low blood sugar curve. I believe some clinicians also have described this condition as equivocal adrenal insufficiency. There is a little experimental evidence that shows a relation between physical exhaustion and the adrenal glands. For example, Ingle has reported that the size of the adrenal glands of a rat increases after a few hours of hard work. In general, however, there is no evidence at the present time that in man the signs and symptoms described are indeed those of adrenal insufficiency, even of a slight insufficiency. In view of the existing situation, I do not see how one can at the present discuss laboratory aids in hypo-adrenalism.

#### THYROID DISEASE

Question: What is the relative value of blood iodine, cholesterol and basal metabolic rate in the diagnosis of thyroid disease?

DR. BODANSKY: The average value of blood iodine is low in most instances of myxedema; the average is about 6 gamma per cent. It is high in most instances of hyperthyroidism; the average is about 16 gamma per cent. However, there is a great deal of variability and one finds normal or even low values in hyperthyroidism and normal values in myxedema. Therefore, I feel one can place some, but not too much, reliance on the blood iodine determination.

The determination of cholesterol is of greater value, especially in hypothyroidism in which the cholesterol varies with the metabolic rate. A patient with a rate of minus 20 usually has an increase of cholesterol of about 100 per cent. A metabolic rate of minus 30 per cent usually is accompanied by an increase in cholesterol to over 400 mgs. The determination of cholesterol in hyperthyroidism is not so valuable. It is only in thyrotoxic cases with crises that low cholesterol values of 100 or even 80 mg. per cent are obtained. In general, an increase in metabolism rate to plus 25 is accompanied by a decrease in cholesterol of about 10 to 15 per cent.

#### SERUM PROLAN

Question: What is the diagnostic value of serum prolan in the late toxemia of pregnancy?

DR. BODANSKY: I imagine the questioner has in

\*Deceased.

mind the work of the Smiths of Boston. They have shown that in pregnancy the amounts of chorionic gonadotropic hormones (prolan) present in urine and plasma increase until they reach a peak about the second or third month. They then decrease somewhat but maintain an increased level until the end of pregnancy. The Smiths have found that in toxicemic patients the levels in both urine and plasma are higher than in normals.

Joslin and his group determine the serum prolan routinely after four or five months, and if they find an increase in serum prolan they place the patient on specific therapy. All these changes are associated and are regarded as the imbalance of metabolism of pregnancy. According to discussion several months ago, other workers have been inclined to disagree with the Joslin group. However, I think Joslin has answered effectively all objections. Serum prolan determination does have some significance in the detailed study of pregnancy cases.

#### SEX HORMONES

Question: What are the advantages of synthetic preparations of female sex hormones over extracts?

DR. WILLARD M. ALLEN, St. Louis: The naturally occurring female sex hormones have no advantage over the synthetic sex hormones. None of the estrogens, now available commercially, is synthetic. The natural estrogens are converted by chemical means into compounds which in some respects are better. Estradiol is esterified with various organic acids, the resulting esters in some instances having a somewhat more prolonged action. Estradiol dipropionate, for example, is much more effective by injection than is estradiol. Stilbestrol is a synthetic estrogen but thus far it has not been accepted for general use, chiefly because it produces nausea and indigestion in some instances.

Progesterone, the corpus luteum hormone, can be obtained in pure form from natural sources or by synthetic means. There is no known chemical or physiologic difference between the natural and the synthetic product.

The androgen, testosterone, is a synthetic product prepared by degradation of cholesterol and is superior to androgens isolated from urine.

#### OVULATION

Question: Is there any sure method of determining ovulation? Will you express your ideas of the presence of pregnandiol? Is futility of pregnandiol important?

DR. ALLEN: The only way of proving ovulation with certainty is to recover the egg or to observe the presence of pregnancy. In general, it is probably correct to assume that the presence of a well developed progesterational endometrium shortly before the onset of menstruation indicates ovulation. Actually, it only indicates the presence of a functioning corpus luteum in the ovary but does not prove that ovulation has occurred. It is well known, of course, that functioning corpora lutea

can be produced in animals without the graffian follicle having ruptured.

The excretion of pregnandiol in the second half of the cycle is likewise presumptive evidence of ovulation, but this is probably even less significant than the presence of a progesterational endometrium.

Question: Is there any proof that pregnant mares' serum or any other hormones have produced ovulation in nonovulatory women?

DR. ALLEN: I do not think it possible to answer this question with any degree of conviction. In patients with amenorrhea, the use of pregnant mares' serum usually has been without effect in so far as the production of menstrual periods is concerned. There are reports, however, that this hormone has been effective in the treatment of sterility. Pituitary preparations as well as pregnant mares' serum may stimulate the ovaries, but this effect is quite different from the production of ovulation. Before ovulation can occur, the graffian follicles have to be stimulated in just the right manner, otherwise they become cystic without the occurrence of ovulation.

#### SULFONAMIDES

Question: In pneumonia, when nausea and vomiting are severe, do you advocate reducing dosage?

DR. HARRISON F. FLIPPIN, Philadelphia: As a rule, reducing the dosage will not stop severe vomiting unless it is associated with high blood concentration of the drug. In general, it is best to administer salt solution parenterally in hope of increasing the urinary output as well as to supply chlorides. Often, in pneumonia, there is a depletion of chlorides and this may play a part in the severe vomiting. Furthermore, the vomiting may cause a further loss of chlorides. At times the administration of alkali is helpful when the vomiting is local in origin. One finds that the barbiturates have a beneficial effect on patients with severe vomiting. Nicotinic acid has proven unsuccessful in my hands. Severe vomiting with sulfapyridine constitutes a real problem but with sulfathiazole and sulfadiazine, particularly the latter, it rarely causes any difficulty.

Question: Are any of the sulfonamides absorbed when given per rectum?

DR. FLIPPIN: Yes, but to a very slight degree, not enough to give satisfactory therapeutic results.

Question: Do you think the sulfonamide derivatives of value in chronic infections such as uveitis or low grade sinusitis?

DR. FLIPPIN: Personally, I have yet to see a case of uveitis benefited by the use of any of these drugs although there are reports of cure in such cases. The use of these drugs in low grade sinusitis, in general, has been disappointing, although some investigators have reported encouraging results. For the most part the sulfonamides do not exert maximum therapeutic effectiveness in chronic conditions such as sinusitis. In this connection I would like to sound a warning regarding the use of sul-

fanilamide and its derivatives in infections involving the middle ear, mastoid and paranasal sinuses. Not infrequently these will give symptomatic relief with a fall in temperature but do not retard the infectious process. It should be remembered that once there is bony necrosis these drugs do little more than protect uninvolved tissue and it is important that one follows patients closely to prevent extension of the infection into the meninges.

#### MIGRAINE

Question: Dr. Alvarez, what are your ideas at present on the treatment of migraine? Please discuss the cases that might be expected to respond to oxygen.

DR. WALTER C. ALVAREZ, Rochester, Minnesota: I feel strongly that the present way of handling migraine is not a credit to the medical profession. The patient is examined from head to foot and nothing is found. Then the patient goes to another man and gets another \$125.00 examination, and then perhaps another without getting relief.

When a patient with migraine comes in I say, "I have little interest in examining you from the neck down because even if I were to find a so-called colitis or even a cancer of the colon, it would have nothing do with the migraine." Migraine is a hereditary condition, a disease probably of the sympathetic ganglions in the neck which influence the size of the external carotid artery. When it opens then up the blood goes surging and pounding into the brain, and when there is abnormal pressure in the cerebral vessels there is pain.

Why then examine these patients from the neck down? Well, if one does not do that, what shall he do? I would say, spend the time in trying to find out what is the matter with the patient's psychologic processes. Whenever a woman tells me that she is having at least three attacks of migraine a week, I say to her, "You must be using your brain uneconomically and wastefully; you are probably unhappy, perhaps, you have some problem you cannot solve, perhaps a sexual one, or you are afraid about something, or you are getting tense." These persons all have a peculiar migrainous temperament; they are tense, mentally active persons who fret over work before it is started, and who want everything done just so.

I have tried many treatments and have never found a drug that would lengthen the interval between attacks. There is only one way I know of to accomplish this. The woman must rest her brain. She may have to get out of a trying job, or she may have to try to find more peace at home. She must stop worrying, fretting and trying to make the world go just so.

Now, when it comes to the handling of an attack, the essential thing is to treat it strenuously the minute it appears. One trouble with patients with migraine is that they often are subject to two headaches, one fairly mild, nervous one and the other a migraine; and when the pain comes they are in-

clined to hope that they are going to have only the mild type of trouble. By the time they discover that it is going to be a migraine headache it may be hard to stop the pain and nausea.

Here is another important point. Once the nausea has started it is often useless to put medicine into the stomach. It will not be absorbed. Medicine has to be given either hypodermically or by rectal injection.

There are only two drugs that I know of that will stop a high percentage of severe attacks of migraine. One is gynergen, which is best given hypodermically. Often it does not work by mouth. If it works well the patient should be taught to take care of a hypodermic syringe and use it. Attacks often come in the middle of the night, and if the patient has to wait until 10:00 or 11:00 the next morning to get a physician, this may be too late for efficient treatment.

The other drug that I have found useful in perhaps four out of five cases of true migraine is pure oxygen. This should be breathed preferably through a B-L-B aviator's mask. One can test it out by getting the anesthetist in the hospital to give it, or it can be given through a basal metabolism machine. If it works well the patient should have a tank, reducing valve and mask at home. Try it for at least two hours at a time. Do not be afraid of it.

#### DUODENAL ULCER

Question: What is your attitude toward the treatment of a patient who has no symptoms but a roentgen ray report of duodenal ulcer?

DR. ALVAREZ: This question reminds me of letters I get occasionally from doctors who say, "I just had a roentgen ray diagnosis of duodenal ulcer made. Should I have a gastro-enterostomy or subtotal resection?" I write back, "Have you any symptoms? What do you want to be operated on for?" Certainly no one is ever going to operate on me for ulcer unless I am having so much pain every night that I have to walk the floor and can not work next day. I will be operated on also if I get one hemorrhage after another or if my pylorus becomes obstructed.

#### PSYCHONEUROSIS AND ORGANIC DISEASE

Question: What do you do with a patient who is psychoneurotic but who also has demonstrable organic illness?

DR. ALVAREZ: The question that must be settled then is, which is the more important of the two troubles? Often the psychoneurosis is far more important and is the one that needs the treatment. For instance, I remember a man who came several years ago with a roentgen ray diagnosis of ulcer and wanted to be operated on. The only symptom he had was epigastric burning which I felt sure was purely functional in origin and not a symptom of ulcer. I found out that he really had a nervous breakdown. Formerly a prosperous business man, he had

not worked for several years. He was jittery and scatter-brained, and he evidently had a small dose of the family's tendency to insanity. I advised strongly against operation because I could not see how it would do him any good, but he finally got a surgeon to remove his ulcer. When I saw him some two years later, he still had his burning and was still unable to work.

Physicians always should try to make the diagnosis of a neurosis or a nervous breakdown from the history and from the behavior of the patient and not by exclusion. If one does that he is less likely to be led astray by some of the things that an obliging roentgenologist tries to find for him.

#### GAS IN COLON

Question: How is gas passed along the colon? Does it go only when there are mass peristaltic waves?

DR. ALVAREZ: I do not know. I have reason to believe that to move gas the colon first must contract down pretty hard, and then these contractions must travel as waves. If the contraction is not complete so that the walls of the gut meet in the middle, the gas will slip backward and not be forced onward.

#### PHLEBITIS

Question: What is the prognosis in migrating phlebitis when there is evidence of involvement of the cerebral vessels?

DR. ALVAREZ: What the physician probably had in mind is Buerger's disease of branches of the carotid artery which is associated sometimes with subacute bacterial endocarditis. In such cases naturally the prognosis is bad.

#### INDICATIONS FOR SURGERY IN PEPTIC ULCER

Question: Please give your ideas in regard to the indications for surgery in peptic ulcer.

DR. LAWRENCE S. FALLIS, Detroit: Patients with peptic ulcer should be submitted to surgery only when complications arise. Pyloric obstruction due to cicatricial contraction at the pylorus, extension of the ulcer into the head of the pancreas with its persistent intractable pain and repeated hemorrhages are definite indications for surgical intervention. Certainly no recent duodenal ulcer should be operated upon. The results in general are better the longer the patient has had the ulcer before operation. In a recent review of case histories of patients who have had this operation, this fact stands out prominently. It is also important in cases of obstruction to differentiate between obstruction due to edema and obstruction due to cicatricial contraction. If operation is done when obstruction is due to edema, the same conditions will prevail after operation and there may be difficulty from edema of the new stoma. In acute hemorrhage, as long as one can keep ahead of the bleeding by means of repeated small blood transfusions it is my practice to defer operation.

The success of the operation of partial gastrectomy for peptic ulcer is to a great extent dependent on a careful selection of patients and good results will be obtained only when the operation is indicated clearly.

#### SHOCK THERAPY

Question: Dr. Bennett, will you please give your ideas of metrazol versus insulin for producing shock?

DR. A. E. BENNETT, Omaha: I use both insulin and metrazol in treatment of schizophrenia and the immediate results have been about equal. There must be some common denominator effective therapeutically in these drugs because the results are so similar. What the active principle is is not known. At the present time statistical studies seem to indicate that insulin shock therapy is holding up better in schizophrenic patients than metrazol. The best results are in admixture types. In true, almost pure test tube culture types, the schizophrenic patient does not respond well to either method. There is considerable doubt in my mind whether the results will hold up in schizophrenia. Insulin shock will not affect the mentally depressed patient. I have given patients from twenty-five to thirty insulin shocks without influencing the mental depression, and yet they have recovered by convulsive methods. It would seem that convulsive shock is better for the manic depressive and insulin for the schizophrenic patient.

Question: What percentage of schizophrenic patients are helped by shock therapy?

DR. BENNETT: That depends on the clinician that does the figuring and on the enthusiasm of the man for the treatment, but in most of the treatments results have been obtained in about 80 per cent of early cases. In the late cases that drops away down, perhaps to 20 per cent. If it is sustained results one is interested in, none has followed these cases long enough to know what the sustained results will be. Personally, I am doubtful whether the sustained results will be much better than with previous methods. The advantage is that shock therapy may give immediate results and thus shorten hospitalization. It is not shock therapy alone that is needed to help these people in their illness but, combined with other methods, psychiatric treatment methods, one gets many of these patients socially rehabilitated so they can adjust themselves; otherwise, they will slip back if one does not change the personality disorder and the social background that started them in their psychoses.

#### PANCREATITIS AND CHOLECYSTITIS

Question: What do you think is the relationship of pancreatitis to cholecystitis?

DR. JEAN M. STEVENSON, Cincinnati: It should be kept in mind that pancreatitis may result from an infection anywhere in the body. The organisms may gain entrance to the pancreatic tissues by the usual methods: direct extension from neigh-

boring infection, inoculation by injury, blood, lymph and by ascending infection through its duct system.

Of all of the infections which may occur in the organs about the pancreas the one which seems to be most often found along with pancreatitis is cholecystitis. I cannot say by what method the pancreas becomes involved but I am convinced that there is a close relationship in the two diseases. The mechanism whereby a stone may cause back-flow of juices into the pancreatic system is well known, but it will explain only an occasional case of pancreatitis. Undoubtedly the close anatomic relationship of the two duct systems and the lymphatic systems plays the leading part. Pancreatitis seems to conform with cholecystitis as to incidence of age and sex. Clinically it has been observed that the Negro is rather infrequently afflicted with either disease. I recall one case at the Cincinnati General Hospital which departed from the usual age and race group, a Negro girl of 12 who had acute pancreatitis along with cholecystitis and cholelithiasis. I believe that the possibilities for contracting pancreatitis are greatest when cholecystitis is present.

#### SODIUM PENTOTHAL

Question: What do you think about sodium pentothal intravenously as anesthesia for minor surgery such as carbuncle incision in an office?

DR. STEVENSON: The words "in an office" cast an entirely different meaning to the question. I am prejudiced against doing surgical procedures in an office even though they may be minor. One is inclined to attempt measures which should require more assistance and more facilities than are available in one's office. Regardless of how one may feel about the matter of office surgery, his attitude toward anesthesia should be pretty well crystallized. General anesthetics carry quite a list of complications and such reverses are not terminated when the anesthetic is discontinued. When a general anesthetic is given, it is well to have at hand every means to prevent an accident even during the critical twenty-four to forty-eight hour post anesthetic period. Pentothal sodium is a general anesthetic. If one feels safe in giving general anesthetics in his office, then I see no contraindications for the use of pentothal sodium if he wishes.

The question mentions carbuncles. The surgical treatment of many of these lesions becomes a major procedure. Often the infection occurs on the neck and I should like to point out that there is considerable danger in giving an intravenous or general anesthetic to an individual who has any kind of severe inflammation which may have extended to the deep structures of this region. I have had alarming experiences with general anesthetics on patients having cellulitis of the neck following the extraction of carious teeth. When any difficulty in breathing exists before the general anesthetic is administered, the patient is almost certain to develop respiratory stridor, anoxia and finally ob-

struction the moment he is relaxed. A quick tracheotomy is then the life-saving measure. The tracheal tube is not long enough and the tracheal catheter usually cannot be inserted in time to avoid disaster. For the extremely severe cases which one is reasonably sure will develop respiratory obstruction under anesthesia, it is advisable to do the tracheotomy before anything else is done.

#### CONTROLLING THERAPEUTIC MALARIA

Another solution to the problem of keeping under control the malaria induced in a patient for treatment of syphilis of the central nervous system and dementia paralytica (a chronic brain disease due to syphilitic infection) is reported in *The Journal of the American Medical Association* for June 14 by C. W. F. Winckel, M.D., Amsterdam, Netherlands. He reports that neoarsphenamine will temporarily arrest the malaria when it is necessary to do so in order to enable the patient to recover sufficiently to continue with the malaria treatment for the time required to obtain the maximum benefits from the fever.

It was reported last August that injections of theobismol would temporarily arrest the chills and fever of malaria. Dr. Winckel points out that his studies show that in reality "neoarsphenamine has a double effect in the treatment of dementia paralytica, not only as an antisiphilitic drug but also in the management of the course of the fever in therapeutic [treatment] malaria.

"Various strains of *Plasmodium vivax* [the species of the malaria parasite which causes the tertian or every forty-eight hour chill form of malaria]," the author explains, "are not equal in their sensitivity to neoarsphenamine, so that one must first determine the dose required for the strain of the parasite in use. . . .

"Neoarsphenamine cannot replace quinine in the treatment of malaria."

#### JOURNAL WARNS AGAINST DRIVING WHEN TAKING SULFANILAMIDE

"Many therapeutically effective drugs influence the physiologic mechanisms, psychomotor [muscular coordination] reactions or judgment of persons who take them," *The Journal of the American Medical Association* for May 17 points out in a warning on the dangers of impaired judgment resulting from the taking of sulfanilamide and its derivatives. "When given to patients at rest in bed such drugs have been established as beneficial to the patient and of course harmless to other persons.

"Under some circumstances, however, drugs may have effects potentially dangerous to both patient and community. Not long ago a locomotive engineer who was taking sulfanilamide for an infection of the bladder was involved in an accident in which considerable property damage was done and a number of people were injured. He described the event as follows:

"Approaching the station where the accident occurred, a feeling of lassitude seems to have crept over me unawares and to the extent that I do not have much recollection of what went on for the last two or three miles. I was sitting on my seat, looking out and feeling that I was on the alert. . . . Actually I was not on the job with all my faculties. I passed landmarks customarily used to locate position without seeing them, even to the station board; and it was only when the hazard became imminent that I was aroused out of it and became efficient."

"Already physicians have ruled that airplane pilots must not fly until four days have elapsed after they have received any of the sulfonamide group."

# THE JOURNAL

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AUGUST, 1941

## EDITORIALS

### GERIATRICS

For some years statistics have shown that the average age of the American population has been increasing. High birth rates and heavy immigration formerly kept the average age low in this country. Since the beginning of the century the birth rate has dropped more than a third and immigration has been cut drastically. Longevity also influences the average age. In 1900 the chance of survival to age 65 was slightly more than 40 per cent; at present the chance is 60 per cent.

Considering the age 65 as the threshold of old age, the percentage of persons in the older age group has increased from 4.1 per cent in 1900 to 6.8 per cent at present. Present trends indicate a percentage of 14 by 1980.\*

Change in age structure of a country has a profound influence. The effect on medical practice already is apparent and without doubt will become more striking as a greater portion of medical practice necessarily will deal with diseases which particularly affect older people. The special branch of medicine, geriatrics, probably will take its place with other specializations.

Mortality statistics in 1938 showed that half of the infants born eventually would succumb to degenerative disease of the circulatory system and kidneys. The chances of dying from this group of diseases rise steadily through life so that at age 60 the chances exceed 60 per cent.

New therapy methods have caused a marked decrease in mortality from pneumonia but the greatest success of modern therapy has been in young rather than older persons.

Orthopedic problems will become greater for not only are older persons more prone to accidents but accidents are more disabling to older persons.

The problem of cancer is of growing importance

and even if death rates at various periods remain at present levels, there will be increasing numbers of cancer patients because of the increasing proportion of older persons in the population.

In younger persons acute illnesses of short duration predominate while in older persons chronic diseases of long duration are more common. This will affect not only the medical profession but hospitals as well. The number of mental cases will tend to increase with advanced average age of the population and further tax the already overtaxed institutions for the care of mental cases.

All present indications point to an increasingly important place for geriatrics among the special fields of medical practice.

### THE NATIONAL PHYSICIANS' COMMITTEE

The first national conference of the National Physicians' Committee for the Extension of Medical Service was held in Cleveland the evening of June 5. One hundred and seventy-five representatives from thirty-two states were present. Issues were clarified and the determination of physicians to preserve the independence of the medical profession became evident and took definite form.

In discussing this most important issue in a short address, Dr. Morris Fishbein, Chicago, said in part:

"Just as the coming of new types of microscope, of the electron microscope, new types of physical therapy, new types of chemotherapy and other new discoveries in medicine make possible a tremendous advance in the campaign against disease, so also does the coming of new machinery for popular education make possible the dissemination of vast amounts of information in a way never previously possible. And it would be unfortunate indeed if modern medicine failed to realize that it must be scientific in its utilization of these new tools of publicity and information and education of the public. Modern medicine would be just as backward if it failed to use those devices as if a physician should say to himself, 'I will not use one of these new drugs that has been invented.'"

"Medicine advances through the use of new technics, and enlightenment of the public must also advance through new technics.

"Now, as our government has advanced, the minds of people have been bewildered by a great many new terms which are a part of the jargon of modern economics. They have been confused by the jargon of modern propaganda and so-called education. All of the various appeals which are utilized in various ways to our population are recognized to be essentially propaganda. Simply, the power that resides in propaganda is now recognized by every government in the world. Our own government has adopted technics which make it extremely difficult for any organization which is primarily a scientific organization to avail itself to the fullest of new technics which nevertheless are available not only to commercial organizations and similar bodies but available now in greater measure

\*Statistical Bulletin, Metropolitan Life Insurance Co. 22:1 (April) 1941.

to the government itself than to any other single organization either for profit or without profit in our country.

"That is the important point to realize. Our own government has created a great propaganda agency for the dissemination of information to the American people regarding the activities of our government.

"Early in American history, in a period around 1776, our nation made a tremendous social gain. We established a country with constitutional government which guaranteed to its citizens certain fundamental rights. One of these was the right of free speech. Another was the right of freedom of worship. And a third was the right of freedom of public assembly.

"There are many countries in the world where an assemblage such as takes place here tonight would, of course, not be possible. But having freedom of public assemblage, and having freedom of speech, you have in your hands two of the greatest forces that you could possibly get in order to make your will known to the people of the United States and in order to make effective the knowledge you possess.

"Would it not then be an extremely archaic and obsolete performance for a body of scientific men to fail to utilize, in order to make their thought and their will and their knowledge effective, the very technic which the science of dissemination of information to the public has brought to us today?

"Now, the best way—and I say this advisedly—in which American Medicine can make its will and its belief and its opinion and its knowledge regarding these new trends widely known to the vast majority of the American people is through an organization such as this.

"I have been concerned now for almost twenty-eight years with the possibilities that exist in the Headquarters Office of the American Medical Association for the dissemination of information to the American people. No other organization, including the United States Government, has done as much to educate the people of America regarding the public health as has been done by the American medical profession through the American Medical Association, the state societies, the county societies and similar groups. But those very organizations, the American Medical Association and the state and county societies, cannot be effective in the dissemination of information leading to action in relation to problems concerning government relationships of medicine. They cannot be as effective in that regard as they can in education regarding disease.

"For that very reason I have personally, and without regard to any position which I may hold in the Headquarters Office of the American Medical Association, felt that in the National Physicians' Committee the American medical profession possesses an organization potential to accomplish more for education of the American people regarding the fundamental standards inherent in the establish-

ment of a high quality of medical service for the people of the United States, than it could possess in any other organization."

Surely individual physicians should support this vital cause and every county medical society should provide an active, aggressive committee to cooperate with the National Physicians' Committee.

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## NEWS NOTES

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Dr. Leroy R. Sante, St. Louis, presented an address on "Pneumoperitoneum as an Aid in Pelvic Irradiation" at the annual meeting of the American Radium Society in Cleveland June 2 and 3.

Dr. J. W. Grauerholz, Kansas City, was a guest of the Miami County (Kansas) Medical Society at Osawatomie, Kansas, on June 11, and spoke on "The Art of Administering an Anesthetic."

Dr. Jesse E. Douglass, Webb City, president of the Missouri Tuberculosis Association, led a discussion on "Technics and Problems in Chest X-Ray" at a roentgen ray conference held in Kirksville, June 6.

Dr. Edward G. McGavran, Morgantown, West Virginia, was appointed health commissioner of St. Louis County on June 30. Dr. McGavran has been director of the West Virginia Public Health Training Center and the Monongalia County (West Virginia) Health Department. He succeeds Dr. T. R. Meyer who resigned as health commissioner of St. Louis County on being called into military service.

The International College of Surgeons will hold its fourth international assembly in Mexico City, Mexico, August 10 to 14, upon the invitation of the Mexican government. Surgeons from most of the countries of the Western hemisphere and also England, Holland, Palestine, Portugal, Switzerland and Turkey will participate. Approximately one hundred twenty speakers will present surgical subjects. Sessions will be conducted in both English and Spanish.

Dr. E. H. Skinner, Kansas City, presented the annual Janeway Lecture at the meeting of the American Radium Society held in Cleveland June 2 and 3. His subject was "The Philosophy and Economics of Cancer." Since 1933 the American Radium Society has sponsored a lecture at its annual meetings in memory of Henry Harrington Janeway's pioneer work in the field of radium therapy. The lecturers are selected because of outstanding scientific contributions and each is presented with the Janeway Medal.

Two assistant residents are needed at the Ellis Fischel State Cancer Hospital, Columbia. Two of three physicians who had accepted these positions were members of the Medical Reserve Corps and have been called into active service, leaving the two vacancies. The openings furnish an opportunity for young men who are not called upon to enter military service to obtain valuable experience in the treatment of cancer. Physicians interested in making application for appointment to fill these vacancies should write at once to Dr. T. P. Eberhard, Medical Director, Ellis Fischel State Cancer Hospital, Columbia.

The Southern Medical Association will meet in St. Louis on Monday afternoon, Tuesday, Wednesday and Thursday, November 10 to 13, instead of Tuesday, Wednesday, Thursday and Friday forenoon, November 11 to 14, as previously announced. The registration will begin at noon on Monday and the scientific programs will begin at 2:00 p. m. and continue through Thursday. The clinical sessions, program by St. Louis physicians, will be held on Monday afternoon and Tuesday forenoon. The registration, scientific and technical exhibits, all clinical sessions, all sections and all conjoint meetings will be held in the Municipal Auditorium. The general session, open to the public, will be held Monday evening; the general session for the address of welcome, the president's address and the report of the council, followed by the president's reception and ball, will be on Tuesday evening; alumni reunion dinners will be on Wednesday evening. These evening activities will be held at the Jefferson Hotel.

## DEATHS

**Leach, Harden T., M.D.,** Elston, graduate of Washington University School of Medicine, 1896; honor member of the Cole County Medical Society; aged 76; died March 30.

**Wright, Chauncey G., M.D.,** St. Louis, graduate of Washington University School of Medicine, 1905; member of the St. Louis Medical Society; aged 68; died June 10.

**Gorin, M. George, M.D.,** St. Louis, graduate of the Missouri Medical College, St. Louis, 1895; honor member of the St. Louis Medical Society; Fellow of the American Medical Association; aged 70; died June 27.

**Vinyard, George Washington, M.D.,** Jackson, graduate of the Missouri Medical College, St. Louis, 1875; honor member of the Cape Girardeau County Medical Society; aged 91; died July 2.

## OBITUARY

### GEORGE WASHINGTON VINYARD (1850-1941)

Ninety-one years is just a legal majority above the Biblical span of three-score-years-and-ten. Such was the privilege of George W. Vinyard who was born on

March 5, 1850, on a farm in Jefferson County, Missouri, near the town of Victoria. After receiving his preliminary education in the Jefferson County public schools, he attended the Missouri Medical College at St. Louis (now Washington University School of Medicine) from whence he was graduated in the class of 1875. He was married on July 26, 1875, to Imogene Amy Brown, daughter of Charles and Elisa Taylor Brown, of Jefferson County, the father being a river man out of St. Louis.

They settled in Longtown, Perry County, Missouri, where Dr. Vinyard practiced for more than thirteen years. In 1889 they moved to Jackson in Cape Girardeau County where the doctor became a partner of the late Dr. Robert T. Henderson. He soon had not only a large practice but took a keen interest in politics and civic affairs. He served as councilman and mayor of Jackson when the town was preparing to install its waterworks. He insisted that the water be supplied by a deep artesian well which has ever since proven its worth. He was also a member of the school board and a member and examining physician on the draft board during the first World War.

Dr. Vinyard was the last surviving charter member of the Southeast Missouri Medical Association which he served for seven years as secretary and for two terms as president. He attended the meetings of the Missouri State Medical Association with great regularity for many years, the last time at Cape Girardeau in 1938.

In politics he was a staunch Democrat but never hesitated to criticize or rebuke the party when he thought such treatment was deserved. He was also outspoken toward members of his own profession when they violated the principles of medical ethics or had wasted time at medical meetings by useless prating or extravagant statement.

Dr. Vinyard withdrew from active practice about eleven years ago and retired to his farm on Hubble Creek, one mile northeast of Jackson. His sight gradually failed so that he was unable to read or write until the sight was restored about one year ago by the surgical removal of a cataract. Thereafter he again was able to use a typewriter and write letters, an occupation which he enjoyed very much and which also pleased those who were so fortunate as to receive one of his delightful letters.

He died on his farm on Wednesday, July 2, 1941, after a comparatively short illness. He is survived by nine children, thirty-six grandchildren and thirteen great-grandchildren, Mrs. Vinyard having departed this life on November 2, 1912. His daughters are Miss Alice Vinyard, who lived with her father; Mrs. G. S. Summers, New Cumberland, Pennsylvania; Mrs. J. R. Hoffmann, Cape Girardeau; Mrs. A. E. Kies, Jackson, and Mrs. J. B. Luten, Caruthersville; and his sons are Charles Vinyard, Jackson; Ben Vinyard, Cape Girardeau; Dr. Paul Vinyard, St. Louis, and Dr. Robert Vinyard, Springfield, Missouri. He was buried from the First Baptist Church of Jackson on Friday, July 4, 1941, with interment in Russell Heights Cemetery. A large number of professional and lay friends attended the ceremony.

Dr. Vinyard was a truly remarkable man with a keen sense of humor and a deep religious spirit. His writings in both prose and poetry are uniformly clear statements in excellent English. The following which was read to the Southeast Missouri Medical Association on October 24, 1924, is quite characteristic: "If I had to live my life over again I would devote it to the practice of medicine, notwithstanding its physical hardships of exposure to inclement weather, midnight toil, its sadness and disappointments. However, there are many roses along the pathway of the faithful physician. When he deserves it, he has the respect and trusting confidence of the community in which he lives and labors."

## MISCELLANY

### 1941 LEGISLATION

The Sixty-First General Assembly of the Missouri Legislature adjourned on July 12. The outcome of bills in which the medical profession was interested, either in favor of or opposed, follows:

House Bill No. 78. Defining and regulating the practice of naturopathy, creating a board of naturopathic examiners, providing for licensing of naturopathic physicians.

This bill failed to pass.

House Bill No. 192. Prohibiting the taking of examinations to practice any branch of the healing art except after examination in the Basic Sciences, Anatomy, Physiology, Chemistry, Bacteriology and Pathology by a state board of examiners.

This bill failed to pass.

House Bill No. 193. Prohibiting the use by any person licensed to practice medicine, surgery, dentistry, optometry, osteopathy, chiropractic, chiropody or veterinary surgery, or any two or more of such professions, and any person permitted to practice the curing, healing or remedying of ailments, defects or diseases of body or mind, from using the prefix "Doctor" or "Dr." in connection with his name in any letter, business card, advertisement, prescription blank, sign or public listing or display without affixing thereto suitable words or letters designating the degree held and representing the profession he is authorized to practice, making violation of the Act a misdemeanor and fixing the punishment therefor, and providing that the Act shall not apply to the use of said designation by doctors of letters, doctors of science, doctors of law, doctors of divinity, or doctors of philosophy not practicing the curing, healing or remedying of bodily or mental ailments, defects or diseases.

This bill was passed with an amendment exempting any person holding any honorary academic degree granted by any recognized school, college or university.

House Bill No. 194. Amending Section 9983, Article 1, Chapter 59, of the Revised Statutes of Missouri, 1939, relating to the examination and qualifications of applicants to practice medicine or surgery in this state by omitting the period after the word "equivalent" in line 15 of said Section and by inserting at the end of said line the following: "and satisfactory evidence of completion of premedical education consisting of a minimum of 60 semester hours of college credit in acceptable subject from a reputable college or university approved by said Board."

This bill was passed.

House Bill No. 201. Requiring every person licensed to practice medicine or surgery in this State to register biennially with the State Board of Health, providing for the method of application and the fees for such registration, the issuance of certificates of registration, and display of the same, requiring the State Board of Health to be notified of changes in the location of the registrant's office, requiring retired licensed practitioners of medicine and surgery to file affidavits with the State Board of Health in lieu of annual registration, providing for the disposal of registration fees and penalties for failure to register. (Registration fee \$1.00 per biennium.)

This bill was passed.

House Bill No. 202. Declaring that the practice of medicine or surgery by unlicensed persons or the doing, committing or continuing of acts prohibited by Section 9988, Revised Statutes of Missouri, 1939, is inimical to public health and constitutes a public nuisance and also authorizing Circuit Court injunction proceedings by the Attorney General, Circuit or Prosecuting Attorneys in the name of the State or by the

State Board of Health in its own name to enjoin such practice or attempted practice and such acts or attempted acts; prescribing the venue, practice and procedure in such actions; providing that such injunction may issue without proof of present or future damage; prohibiting temporary injunctions pursuant to this Act; and providing that such proceedings under this Act are in addition to and not in lieu of proceedings to revoke licenses to practice medicine and surgery or criminal proceedings against and punishment of such persons.

This bill failed to pass.

House Bill No. 495. Amending Article II, Chapter 4, Revised Statutes of Missouri, 1939, relating to "Construction of Statutes" defining "physician" and "surgeon"; providing that words "physician" and "surgeon" used in any Missouri statute other than their use in Article I, Chapter 59, and Article I, Chapter 62, be construed to include practitioners of any osteopathic school of medicine recognized by the laws of Missouri as being endowed with definite privileges, rights and duties, which are defined in the bill.

This bill failed to pass.

House Bill No. 617. Providing for the establishment and administration of health insurance.

This bill failed to pass.

Senate Bill No. 7. Providing for liens in favor of public and charity-supported private hospitals, clinics and other institutions for the care of the sick, furnishing care, treatment and maintenance to persons injured by the negligence or wrongful act of others, upon the rights of action, claims or demands of such injured persons against the persons causing such injury, for damage on account of such injury, and upon the proceeds of any settlement of any such right of action, claim or demand; and providing for notice of and the enforcement of such liens.

This bill was passed.

Senate Bill No. 15. To further the control of congenital syphilis by requiring a serological blood test for syphilis in pregnant women, requiring the filling out of reports to the State Department of Health, setting up supervisions necessary to protect the health of the mother and child, and provide a penalty for failure or refusal to observe the law.

This bill was passed.

Senate Bill No. 37. Providing for medical examination for venereal diseases of applicants for a marriage license and providing rules and regulations by the State Board of Health.

This bill failed to pass.

Senate Bill No. 156. Providing for levies for county hospital improvements. Amended to provide for osteopaths to practice in all Missouri county hospitals.

This bill failed to pass.

That coronary thrombosis (a blood clot in an artery which shuts off the blood supply to the muscles of the heart), though uncommon before the age of 30 or 35, can occur is shown by the postmortem findings of the heart of a youth of 21, Dean Macdonald, M.D., St. Catharines, Ont., reports in *The Journal of the American Medical Association* for June 28.

Dr. Macdonald says: "The case was instructive because the condition was repeated twice and proved fatal [the third and fatal attack occurred ten and a half months after the first] when the patient was 22 years of age. The pain was relieved by vasodilators [drugs that dilate blood vessels] and the pain of the third attack was indistinguishable from that of cholelithiasis [gallstone attack]; such a condition should always be considered, even in young persons. The law of averages may prove that coronary thrombosis is not common under the ages of 30 to 35 years, but this does not prove that it cannot occur.

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

- Chariton County Medical Society, December 2, 1940.
- Montgomery County Medical Society, December 2, 1940.
- Perry County Medical Society, December 14, 1940.
- Ste. Genevieve County Medical Society, December 17, 1940.
- Howard County Medical Society, January 2, 1941.
- Camden County Medical Society, January 7, 1941.
- Andrew County Medical Society, January 9, 1941.
- Benton County Medical Society, January 28, 1941.
- Clinton County Medical Society, February 6, 1941.
- Holt County Medical Society, February 8, 1941.
- Macon County Medical Society, February 15, 1941.
- Moniteau County Medical Society, February 15, 1941.
- Mercer County Medical Society, March 12, 1941.
- Dallas-Hickory-Polk County Medical Society, April 4, 1941.
- Miller County Medical Society, April 4, 1941.
- Morgan County Medical Society, April 5, 1941.
- Johnson County Medical Society, April 11, 1941.
- DeKalb County Medical Society, April 25, 1941.
- Carter-Shannon County Medical Society, May 1, 1941.
- Pulaski County Medical Society, May 24, 1941.
- Christian County Medical Society, June 12, 1941.
- St. Francois-Iron-Madison-Washington-Reynolds County Medical Society, July 9, 1941.

## ASSOCIATE EDITORS: COUNCILORS OF THE TEN COUNCILOR DISTRICTS

### TENTH COUNCILOR DISTRICT

E. J. NIENSTEDT, SIKESTON, COUNCILOR

St. Francois-Iron-Madison-Washington-Reynolds County Medical Society

The St. Francois-Iron-Madison-Washington-Reynolds County Medical Society met at the St. Francois County Courthouse, Farmington, on May 30, at 7:30 p. m.

Dr. B. Y. Glassberg, St. Louis, gave a general discourse on "Diabetes" which was followed by discussion.

Members present were Drs. Harry W. Barron and Moses B. Barber, Fredericktown; John P. Yeagain, Irondale; Van W. Taylor, David E. Smith and H. M. Roebber, Bonne Terre; N. W. Hawkins, Emmett F. Hoctor, Ralph Kuhlman and C. C. Ault, Farmington.

#### Meeting of June 27

The Society met at the St. Francois County Courthouse, Farmington, on June 27 at 7:30 p. m.

Dr. Stanley F. Hampton, St. Louis, spoke on "Allergy in Relation to General Practice." A round table discussion followed the presentation.

C. C. AULT, M.D., Secretary.

## WOMAN'S AUXILIARY

### WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

President, Mrs. R. E. Mosiman, Seattle, Washington.  
President-Elect, Mrs. Frank N. Haggard, San Antonio, Texas.

### WOMAN'S AUXILIARY TO THE MISSOURI STATE MEDICAL ASSOCIATION

President, Mrs. James J. Drace, Cape Girardeau.  
President-Elect, Mrs. Frank L. Davis, St. Louis.  
Adviser, Dr. Herbert L. Mantz, Kansas City.

The nineteenth annual convention of the Woman's Auxiliary to the American Medical Association, held in Cleveland, June 2 to 6, was attended by more than a thousand women. The Auxiliary now has a membership of 26,000 women, a gain of more than 4,000 members in the last year.

Reports of the presidents of thirty-five of the thirty-nine states with organizations and of officers and national chairmen showed an increase in interest and work accomplished. Drs. Morris Fishbein, W. W. Bauer, Nathan B. Van Etten and Frank Lahey presented addresses.

The Auxiliary adopted a resolution offering the American Medical Association its "full and complete cooperation in coordination plans for the aid of the doctors in this crisis."

Mrs. Willard Bartlett, St. Louis, was one of three women elected to honorary life membership for distinguished service to the Auxiliary, Mrs. Charles H. Werner, St. Joseph, was chosen national chairman of the *Bulletin*.

Missouri women who were delegates at the convention were Mrs. Charles H. Werner, St. Joseph; Mrs. J. J. Drace, Cape Girardeau; Mrs. M. Pinson Neal, Columbia; Mrs. W. H. Goodson, Liberty; Mrs. B. A. Dumbauld, Webb City; Mrs. Lee D. Cady, Mrs. Martin J. Glaser,

Mrs. K. C. Williams, Mrs. Charles A. Leavy and Mrs. Robert E. Schlueter, St. Louis.

New officers are: President, Mrs. R. E. Mosiman, Seattle; president-elect, Mrs. Frank N. Haggard, San Antonio; vice presidents, Mrs. J. L. Bauer, Brooklyn, Mrs. A. E. Anderson, Fresno, Mrs. H. E. Christenberry, Knoxville, Mrs. P. R. Urmston, Bay City; recording secretary, Mrs. Samuel H. Flowers, Middlesboro, Kentucky; treasurer, Mrs. David W. Thomas, Lock Haven, Pennsylvania.

Mrs. J. J. Drace, Cape Girardeau, president of the Missouri Auxiliary, has appointed the following chairmen of committees: Mrs. J. B. McCubbin, Fulton, auditor; Mrs. A. M. Estes, Jackson, Archives; Mrs. J. E. Wensley, Harrisonville, courtesy; Mrs. Frank Davis, St. Louis, essay contest; Mrs. Samuel J. King, University City, finance; Mrs. E. E. Glenn, Springfield, legislation; Mrs. R. C. Haynes, Marshall, organization; Mrs. W. H. Goodson, Liberty, press and publicity; Mrs. F. H. Maples, Marshall, program; Mrs. Bernard T. Koon, Perryville, public relations; Mrs. David S. Long, Harrisonville, revisions; Mrs. Herman S. Gove, Jefferson City, *Bulletin*; Mrs. George H. Thiele, Kansas City, circulation manager of *Quarterly Bulletin*.

## BOOK REVIEWS

**OFFICE UROLOGY WITH A SECTION ON CYSTOSCOPY.** By P. S. Pelouze, M.D., Assistant Professor of Urology, University of Pennsylvania; Consulting Urologist, Delaware County Hospital; Special Consultant to United States Public Health Service; etc. With 443 illustrations nineteen of them in color. Philadelphia and London: W. B. Saunders Company. 1940. Price \$10.00.

As the author is fully qualified to write a book of this type, he has presented his own experiences and ideas in regard to the diagnosis and treatment of office problems in a personal, clear and informative manner. The subject matter is arranged ideally beginning with the arrangement of a urologic office and following with a discussion on urologic anatomy, physiology, history taking, examinations, diagnosis, symptoms, treatment and diseases of the urogenital system. In addition, the chapters on sexual problems and on cystoscopy are excellent. This book should prove to be of extreme value to the general practitioner and useful to the urologist.

H. C.

**ROENTGEN INTERPRETATION.** By George W. Holmes, M.D., Roentgenologist to the Massachusetts General Hospital and Clinical Professor of Roentgenology, Harvard Medical School. Sixth edition, thoroughly revised. Illustrated with 246 engravings. Philadelphia: Lea & Febiger. 1941. Price \$5.00.

The sixth edition of this valuable book has been revised and brought fully up to date. Long a favorite text for practitioners and students of roentgenology, this book still maintains its place among the outstanding books published for this purpose. It is written in a simple, direct manner, presenting the various phases of roentgen diagnosis concisely and clearly in a form acceptable to the student. The bibliography of outstanding articles at the end of each chapter should be a welcome addition and guide to the further study of each subject.

Every student of roentgenology should have this book as a guide for his study; no teacher of roentgenology can afford to be without it.

L. R. S.

## MEANS OF PREVENTION OF KIDNEY STONES IN BEDRIDDEN PATIENTS

Changes in posture and the taking of large quantities of water to facilitate drainage or emptying of the kidneys will prevent the formation of kidney stones in bedridden patients, Montague L. Boyd, M.D., Atlanta, Ga., says in *The Journal of the American Medical Association* for May 17. He points out that kidney stones may form because of inadequate drainage of the kidneys as the result of a patient's lying too long in one position.

"The discussions concerning preventive treatment," he says, "have emphasized the correction of metabolic disturbances, the relief of urinary obstruction, the removal of foci of infection, regulation of the diet and the administration of vitamins and have neglected to stress adequately the importance of obtaining renal [kidney] drainage by proper posture aided by a large urinary output, the two things which, I think are perhaps of greatest importance in the prevention of the phosphatic stones [of calcium phosphate]."

Dr. Boyd states that in his experience "it has been the phosphatic stones which have produced the most serious results [in bedridden invalids], because they can form rapidly and without symptoms, so that they may have already produced a serious condition [kidney damage] when they are discovered. . . .

"I have had 3 patients who had multiple phosphatic renal calculi [kidney stones] after poliomyelitis; 1 had both kidneys full of stones and 2 had one kidney full and some stones in the other one. Two of these patients died, and the other one, after many operations, has attained fairly good health.

"Last year I had a patient whose condition, when he came to me, was, I feel sure, the early stage of the condition that I found in the other patients—five or six of the minor calices [divisions or sections] of the left kidney were filled or almost filled with many small stones and sand, and many of the minor calices of the right kidney contained a little sand. . . . The patient had been bedridden for about three months because of a fractured femur [thigh bone] which refused to unite satisfactorily. . . . Drainage free enough to rid the kidneys of the sand and the stone could not occur because of the position of the kidneys unless the patient would lie on, or almost on, the ventral [abdominal] surface of the body. He began at once to assume this position for several hours a day, having each time first drunk a large amount of water. He passed all the sand and small stones from the kidneys without much difficulty, except the large stones in the right kidney, which would not pass through the ureter [urinary canal from the kidney to the bladder] and later on had to be removed at operation."

Contrary to the prevalent belief that the health and physical status of Negro sharecroppers are lamentable, J. W. Thompson, M.B., Boston, presents suggestive evidence in *The Journal of the American Medical Association* for July 5 that their health and physical status, in certain areas, are not far below the standard of excellence in a white group enjoying hygienic advantages.

The report is based on a study made of male Negroes within the age limits of 17 to 24, living on a plantation at Scott, Mississippi. The selection of cases was made at random among the sharecropper families. In his conclusions the author says, "The Negro sharecroppers who have been the source for this report were all, with one exception, in good general physical condition.

"It is believed that this group does not differ significantly from the majority of Negro sharecroppers working on first rate plantations.

"The physical status, apart from gonococcal infections, of the plantation Negro is not far below the standard of excellence in a white group."

# THE JOURNAL

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### FETAL-MATERNAL INTERDEPENDENCE: NUTRITIONAL AND METABOLIC FACTORS

MEYER BODANSKY, M.D.\*

GALVESTON, TEXAS

The placenta is, at one and the same time, a wall and a gateway. It is a barricade of special design which protects yet does not shut off the embryo from the maternal organism. It provides for the fetus, in its relations with the host, a combination of two diametrically opposed conditions, separateness and unity. The basis for this extraordinary combination is anatomic and physiologic. The structural and functional properties of the placenta, as noted by F. C. Irving,<sup>1</sup> have no counterpart elsewhere in the body. "Although the circulation of both mother and fetus are brought into closest juxtaposition, there is never normally any intermingling of blood."

If the fetal organism is to become even quasi-independent of its surroundings, it must establish early in the course of embryonic development its own "milieu interieur." In accordance with the doctrine of Claude Bernard, it is to be assumed that preservation of the constancy of this internal environment is an essential condition for the survival and normal development of the fetus. It also seems logical to extend, with possible reservations, the concept of physiologic homeostasis, postulated by Cannon, to include the coordinated physiologic processes whereby the "steady state" of the organism is maintained during intra-uterine life.

Although the fetus is in many respects a parasite, it nevertheless may play a part in the regulatory mechanisms of the maternal organism. The influence of the fetal pancreas in promoting the carbohydrate metabolism of the mother, described by Carlson and Drennan,<sup>2</sup> is often cited as an example of such an interrelationship. However, other

workers either have failed to confirm Carlson's conclusions or have been inclined to attribute the increased carbohydrate tolerance of diabetic patients in late pregnancy to increased utilization of carbohydrate rather than to fetal pancreatic activity.

Most relations, however, deal not with what the fetus and placenta do for the mother but with what the mother does for the fetus. The latter is concerned largely with its own welfare while the maternal organism must establish conditions favorable both to fetal development and its own security. This creates the need for a multiplicity of adjustments which are not always achieved. To illustrate by a simple example: the intake of calcium during pregnancy may be insufficient to meet both the fetal and maternal requirements. The maternal organism, however, adjusts to this lack by mobilizing bone salts from its own skeleton. It can do this, as I shall point out presently, provided the parathyroids are stimulated adequately and provided there exists also a mobilizable calcium reserve. The latter condition is not met in severe osteomalacia.

Other examples may be cited to illustrate how the interests of the mother frequently conflict with those of the fetus. The pregnant organism must adapt itself, therefore, to these conflicting interests. If physiologic homeostasis is to be achieved, the physiologic processes must become coordinated, though not necessarily according to the pattern of the nonpregnant state. There is evidence to justify the assumption that during pregnancy the regulatory mechanism are more labile and under much greater stress than normally.

Present knowledge does not permit a completely coordinated view of fetal-maternal relations, although in recent years some progress has been made in elucidating certain aspects of the subject, particularly those relating to the nutritional requirements and metabolic changes occurring during normal and abnormal pregnancy. While it is impossible to review the entire subject, a few topics will be selected for brief discussion, partly because of their clinical relevance.

The influence of dietary restriction during preg-

\*Deceased.

From the John Sealy Memorial Research Laboratory and the University of Texas School of Medicine, Galveston, Texas. Presented at the 84th Annual Session of the Missouri State Medical Association, St. Louis, April 28, 29, 30, 1941.

nancy on the weight of the offspring is unsettled. Data reported from Central Europe during and immediately after the World War of 1914-1918 failed to show that birth weights were affected significantly by the limited food intake of the mothers during pregnancy. On the other hand, Toverud<sup>3</sup> found that women cared for in a maternity home during the last two months of pregnancy and whose diet included cod liver oil and a quart of milk daily gave birth to babies weighing on an average 7 per cent more than the babies of mothers who entered the maternity home near term. The factors determining the size of the newborn as listed by Adair<sup>4</sup> are race, heredity, length of gestation, parity, sex, the mother's age, nutrition and health.

Maternal nutrition and fetal nutrition are not necessarily parallel. Except in extreme cases of undernutrition, the maternal organism usually possesses sufficient reserves to supply the fetal demands. What the fetus receives is determined by two factors, the concentration of the various nutrients (as amino acids, glucose, minerals and vitamins) in the maternal tissues and blood and the transmission of these substances across the placental barrier. As Sontag<sup>5</sup> has recently pointed out: "Because of the maternal stores, the source of food available for fetal needs is great, with a vast margin of safety over usual fetal requirements. 'Importation facilities'—the means by which the placenta transmits supplies of food from the maternal to the fetal circulation—do not, however, afford such a broad margin of safety. All, or nearly all, of the capillary area of the placenta is used for the normal nutrition of the growing fetus."

This conclusion is supported by such evidence as Adair and Thelander's<sup>6</sup> data of the relationship between the size of the placenta and the size of the fetus and of the effects of impairment of placental function due to degenerative changes in limiting the growth of the fetus. Placental deficiency or insufficiency are important factors in stunting the growth of the fetus (Adair and Schumann<sup>7</sup>).

Other factors have received attention. Swanson and Iob<sup>8</sup> have submitted data to show that the growth of the fetus and the subsequent growth of the infant are influenced favorably by an abundant intake of minerals and vitamin D during pregnancy. Experimental laboratory studies (Bodansky and Duff<sup>9</sup>) have shown that maternal parathyroid deficiency or other conditions which lower markedly the calcium content of the maternal and fetal blood impair fetal growth and calcification. Excessive fetal growth in diabetic mothers has been related to the high concentration of glucose in the fetal circulation and its conversion into fat. However it has been suggested that relative deficiency of vitamin B<sub>1</sub> may be responsible for the large, flabby edematous babies born of diabetic mothers.<sup>10</sup>

Arnold<sup>11</sup> has attempted to control fetal weight by the administration of thyroid during pregnancy. Sontag<sup>5</sup> has stressed the relation of excessive fetal activity, requiring the consumption of energy-

producing foods which might otherwise be stored as fetal fat, to the nutritional state of the infant at birth. Active and frequent fetal movements, more severe when the mother is under unusual and more or less constant emotional stress, may depend on frequent and excessive liberation of epinephrine (Sontag<sup>5</sup>).

#### FETAL STORAGE OF IRON: ANEMIA OF INFANCY

The clinical importance of anemia in infancy has stimulated considerable research in the maternal-fetal metabolism of iron. It has been established by Coons<sup>12</sup> that a positive balance almost invariably is maintained in gravid women on a daily intake of from 10 to 20 mg. of iron, an amount which is about twice the usual adult requirement. Coons estimated an average retention of 3.2 mg. per day for the entire gestation period. This would correspond to a total of 0.9 gm., of which slightly more than 0.5 gm. is stored in the hypertrophied muscles and other tissues of the mother while nearly 0.4 gm. represents the fetal storage. This estimate of fetal storage is higher than the average of 280 mg. which has been obtained by direct analysis of stillborn full term infants.

Most of the iron at birth is present as hemoglobin but a fraction, averaging about 50 mg., represents the nonhemoglobin iron reserve. Next to the blood, the liver is the principal site of its storage. This reserve is increased somewhat during the neonatal period. The concentration of hemoglobin at birth is approximately 18 to 20 gm. per 100 cc. of blood but diminishes during the first two months to about 11 or 12 gm. per 100 cc. The change is believed to represent an adjustment to extra-uterine life and is, therefore, physiologic. Even though the blood volume is increased during this period by about 20 per cent, the amount of circulating hemoglobin is actually less by an estimated amount of from 15 to 20 grams. This amount is equivalent to from 50 to 70 mg. of iron. Although some of this iron may be lost through excretion, a portion is retained and serves to augment the nonhemoglobin iron reserve present at birth.

This reserve, together with the small amounts of iron derived from the food (milk), is of potential value in hemoglobin production and is usually sufficient to meet the requirements during the first six months of infancy but, after it is exhausted, hypochromic anemia develops unless the diet is supplemented by iron-containing foods. Cow's milk is reputedly low in iron. Rapidity of growth, frequency and severity of infections, gastrointestinal disorders, the composition of the diet and other factors influence the rate of depletion of the iron reserve.

However, not all infants are endowed at birth with a sufficient reserve of iron to tide them over the first six to twelve months of life. Because most of the fetal storage of iron occurs in the last two to three months of gestation, premature infants have a low reserve, as have infants of low birth

weight and twins. Iron deficiency and anemia in the mother during pregnancy are also very significant. While these factors may not influence the blood count or hemoglobin of the offspring at birth, the fetal iron reserve is lowered appreciably thereby. Such deficiency of the iron reserve, if not corrected therapeutically early in infancy, invariably leads to the development of hypochromic anemia during the first year and, occasionally, as early as the third month.

The relation of fetal-maternal iron metabolism to nutritional anemia of infancy and the blood changes during the neonatal period have been reviewed by Faxen,<sup>13</sup> Guest,<sup>14</sup> Heath,<sup>15</sup> Josephs,<sup>16</sup> Kato and Emery,<sup>17</sup> Strauss<sup>18</sup> and others. Elvehjem and associates<sup>19</sup> have discussed the role of copper in hematopoiesis and its relation to iron metabolism. Most of the blood diseases of the newborn period remain etiologically obscure but, as brought out in Carl H. Smith's recent review,<sup>20</sup> there is growing interest in the possibility that at least some of these conditions, especially erythroblastosis fetalis, may depend on deficiencies of one or more hematopoietic factors in the maternal organism or the failure to transmit these factors to the fetus.

#### HEMORRHAGIC DISEASE OF THE NEWBORN: VITAMIN K

Maternal-fetal relations have been demonstrated in hemorrhagic disease of the newborn. This disorder now is known to be due to a temporary deficiency of prothrombin during the first few days of life and is promptly corrected by the administration of vitamin K. However, there is lack of agreement among different workers concerning the concentration of prothrombin in the blood at birth. According to the observations of Quick and Grossman,<sup>21</sup> the plasma prothrombin is approximately normal at birth and remains at this level for at least six hours. Subsequently, the prothrombin concentration shows wide fluctuations and in some cases declines sharply. The low point occurs from forty-eight to seventy-eight hours after birth. Thereafter it rises progressively and is restored to normal in a few days. Waddell and Guerry,<sup>22</sup> among others, have observed a similar sequence of events in some instances while, in other cases, the concentration of prothrombin in the blood at birth was found to be much lower than in the maternal blood, as originally noted by Brinkhous, Smith and Warner.<sup>23</sup> Hellman and Shettles,<sup>24</sup> using the method of Brinkhous *et al.*, found that the plasma prothrombin of newborn full term infants is on an average only about one fifth of that of the mother (22.2 dilution units for infant, 102.5 for mother). For premature infants even lower values were recorded (8.3 units for infant, 126.9 units for mother). Kato and Poncher<sup>25</sup> found the plasma prothrombin to vary within wide limits both in premature and full term infants. The average values were approximately the same in both groups.

Waddell and Guerry<sup>26</sup> proved that administration

of vitamin K during the first or second day of life is effective in preventing or curing spontaneous hemorrhage, concealed or apparent, associated with prothrombin deficiency and occurring during the first week of life. Not only has this been amply confirmed (Poncher and Kato<sup>27</sup> and others) but it has been demonstrated that the low prothrombin titer in newborn infants can be raised by the administration of vitamin K to the mothers antenatally, and even during labor (Shettles, Delfs and Hellman<sup>28</sup>). More recently, Maumenee, Hellman and Shettles<sup>29</sup> have attempted to evaluate the prophylactic value of vitamin K employing as a criterion the frequency of occurrence of retinal hemorrhages. They found that infants with retinal hemorrhage show lower plasma prothrombin values than normal infants. The administration of vitamin K to mothers during labor (one 2 mg. dose of 2-methyl, -1, 4-naphthoquinone) reduced the incidence of retinal hemorrhage, in the newborn to 15.2 per cent compared to 25.1 per cent in the untreated group. The administration of the vitamin for several days prior to labor reduced the incidence to 7 per cent. The infants with retinal hemorrhage were found to have low plasma prothrombin values even though the mother may have received vitamin K. Deficient absorption and possibly other factors may be involved. Javert<sup>30</sup> reported the development of prothrombin deficiency and hemorrhagic disease during intra-uterine life. Bloody amniotic fluid occurred in two cases while a third had intraplacental and retroplacental hemorrhages. In the third case, the prothrombin concentration of the mother's blood was normal while that of the cord blood was only 13 per cent of normal.

#### VITAMINS AND THE PLACENTAL BARRIER

Such differences in distribution on the two sides of the placental barrier should stimulate further inquiry into the broader aspects of the problem as applied to other vitamins. Available data concerning vitamin A indicate that the reserves at birth are usually of a low order.<sup>31, 32</sup> It is recognized generally that pregnancy increases the requirement for thiamine (vitamin B<sub>1</sub>). Polyneuritis of pregnancy has been attributed to thiamine deficiency and it also has been suggested that such deficiency may be a factor on the course, if not in the etiology, of hyperemesis gravidarum.<sup>33</sup> Weiss and Wilkins<sup>34</sup> were among the first to emphasize that the occurrence of cardiovascular involvement, or so-called beriberi heart, is not as rare in this country as has been supposed. It occasionally is encountered in severely malnourished pregnant women. The effects of chronic vitamin B<sub>1</sub> deficiency in the mother on the fetal organism are unknown. It is possible that even when the maternal diet is extremely deficient in vitamin B<sub>1</sub> fetal requirements are met at the expense of the maternal organism. As regards other components of the vitamin B complex (riboflavin, pyridoxine, nicotinic acid, pantothenic acid) it is to be assumed that the fetus

is dependent on an adequate supply of these from the mother but the relations involved at present are unknown.

Manahan and Eastman<sup>35</sup> have shown that the concentration of ascorbic acid (vitamin C) in fetal blood is regularly almost three times that in the maternal blood (average of 0.38 mg. per 100 cc. of plasma in maternal blood, average of 1.15 mg. per 100 cc. of cord blood). This ratio is maintained even when concentration in the maternal blood is elevated greatly by increasing the intake of vitamin C.

#### CALCIUM-PHOSPHORUS METABOLISM: PARATHYROID FUNCTION

Vitamin D promotes the absorption of calcium and, according to many observers (Sontag, Munson and Huff<sup>36</sup>; Swanson and Iob<sup>37</sup>; H. I. Chu, S. H. Liu, et al.<sup>37</sup>), exerts, thereby, a beneficial effect on the economy of utilization of calcium and phosphorus by the mother and on the storage of these elements by the fetus.

The study of fetal calcification brings into view a complex set of relations involving the composition of the maternal diet, parathyroid function and other factors. It has been estimated by Macy and Hunscher<sup>38</sup> that the maternal organism normally stores a total of about 30 gm. of calcium, of which 23 to 24 grams represents the fetal storage. The placenta at term contains on an average about 0.5 gm. of calcium. The remainder is retained in the maternal tissues and is drawn upon during lactation. On an adequate intake of phosphorus, a total of about 65 gm. usually is stored of which about 14 grams is utilized by the fetus and about 50 gm. is deposited in the maternal tissues. This, too, becomes available for milk production.

Metabolism studies in pregnant women have shown that periods of negative calcium balance may occur even when the intake is two to three times the normal requirement for the nonpregnant adult (Macy et al.<sup>39</sup>). It is noteworthy that such periods frequently are associated with anxiety or worry in the patient. During pregnancy the parathyroids increase in size and activity. Hypertrophy of the glands is more prominent when the diet is deficient in calcium or unusually high in phosphorus. It is somewhat less marked when the diet is adequate. Experimental studies have shown that the parathyroids are essential for normal pregnancy and fetal development. In the absence of the parathyroids the normal mechanism for mobilizing the calcium reserve is abolished. Excretion of phosphorus likewise is impaired. Parathyroid deficiency results, therefore, in marked depression of the serum calcium both on the maternal and fetal side of the placental barrier. Such depression lowers sharply the fetal storage of calcium and phosphorus.

Fortunately, severe parathyroid deficiency is extremely rare. In 1939 Drake, Albright, Bauer and Castleman<sup>40</sup> collected eight cases from the litera-

ture and reported six additional cases. Kowalis<sup>41</sup> described a case of spontaneous parathyroid deficiency in a woman. During pregnancy severe cramps in the hands and legs were frequent but the first convulsion occurred six weeks postpartum. The serum calcium at that time was 5.1 mg. The patient was effectively treated with dihydro-tachysterol (A. T. 10) 1 cc. daily.

Although severe cases are infrequent, it is conceivable that milder degrees of hypoparathyroidism may occur more commonly than is generally realized. It is known that the serum calcium declines to an average of about 9.5 mg. in the ninth month. More significant perhaps is the increased frequency of values below 9 mg. and the occurrence occasionally of values in the neighborhood of 8 mg.<sup>42</sup> Low values, such as the last, are definitely subnormal. They might be due to a deficient intake of calcium or to vitamin D depletion. However, such conditions may be expected to stimulate the parathyroid to increased activity in order to compensate for these deficiencies. Hypocalcemia, though moderate, may signify that a maximal or adequate response of the parathyroids is not obtained uniformly in all pregnant women. There is also some evidence that the effects of increased parathyroid activity during pregnancy are held in check or antagonized by some other factor and that deviation below or above a certain level (8.5 to 9.5) represents an imbalance between the parathyroid hormone and its antagonists.

The parathyroids may, however, become enormously enlarged and hyperactive and yet fail to maintain the normal serum calcium level because of a lack of a mobilizable calcium reserve. This combination may be produced experimentally but has a clinical counterpart in osteomalacia, a condition which is more or less prevalent in Oriental countries, particularly in Northern China. In untreated cases of osteomalacia the serum calcium during pregnancy may fall as low as 4 mg. per 100 cc. as observed by Maxwell.<sup>43</sup> It is to be expected that under these conditions the concentration in the fetal blood, although somewhat higher than in the maternal blood, is nevertheless at a depressed level. This is undoubtedly a major factor in the production of fetal rickets. Experimental results obtained in the laboratory lead me to believe that normal fetal growth and calcification depend on the maintenance of suitable concentrations of calcium and phosphorus in the maternal (and fetal) blood. In figure 1 are represented several combinations which are considered to be compatible and others which are incompatible with normal storage of calcium and phosphorus by the fetus.

The diagrams in figure 1 show that the serum calcium is invariably higher in the fetal than in the maternal blood. In the woman the difference at the time of delivery usually varies from 1 to 3 mg. The mechanism responsible for the higher level in the fetal circulation is unknown but several explanations suggest themselves. The differ-

ence may be related to the asphyxia and the accompanying rise in hydrogen-ion concentration of the blood as suggested by Collip.<sup>44</sup> The role of the fetal parathyroids in this regard is unknown. In the calf fetus these glands become active at seven months according to Sato.<sup>45</sup> However, a similar principle is found in the fetal liver much earlier but not in other fetal tissues (spleen, thymus, placenta). Reports concerning the effect of placental extracts on the serum calcium are conflicting. Some have described a calcium-raising effect while others obtained negative results. The possibility that the maternal portion of the placenta may contain a calcium-depressing substance and the fetal portion a calcium-raising substance is a speculation which is worth investigating.

#### PARATHYROIDS: HYPOCALCEMIA AND NEONATAL TETANY

Whatever the basis for the relatively high serum calcium in the fetal circulation, it is known to fall more or less rapidly within a few days after birth.

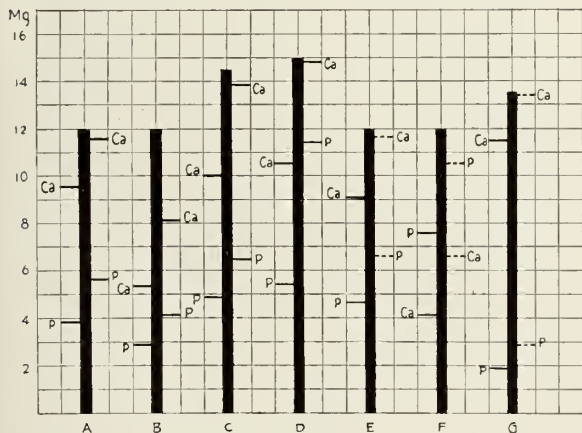


Fig. 1. Concentrations of calcium and inorganic phosphorus on opposite sides of the placental barrier. Diagram A. Human, at delivery. The  $\text{Ca} \times \text{P}$  product of the maternal blood is  $9.5 \times 3.9 = 37$ , and that of the cord blood is  $11.6 \times 5.6 = 65.0$ . Assuming, as seems probable, that similar relations held before delivery, the conditions for fetal calcification in this case may be considered to have been normal.

Diagram B. This is based on data obtained by Maxwell<sup>46</sup> in a case of severe osteomalacia. The  $\text{Ca} \times \text{P}$  product is  $5.4 \times 2.9 = 15.7$  on the maternal side and  $8.1 \times 4.2 = 34$  on the fetal side of the placental barrier. Judging from the fact that fetal rickets occurred in this case, it may be assumed that these conditions were not suited to normal fetal development.

Diagram C is based on a set of figures given by Allcroft and Godden (Biochem. J. 28:1004, 1934) for a cow and its newborn calf, and diagram D is based on average values given by Collip<sup>44</sup> for cows and calves. These diagrams illustrate the differences in values on the two sides of the placental barrier. According to Collip the higher values for calcium and phosphorus in the fetal circulation are due to the state of relative asphyxia and increased hydrogen ion concentration in the fetal circulation.

Diagram E indicates the serum calcium and phosphorus values at the time of delivery in a normal rat which had been fed an adequate diet during pregnancy. The product is  $9.1 \times 4.7 = 43$ . The values on the placental side are conjectural. However, the conditions represented are compatible with normal fetal calcification.

Diagram F. Values obtained in a parathyroidectomized rat. The  $\text{Ca} \times \text{P}$  product of the maternal blood at delivery was  $4.0 \times 7.8 = 31.2$ . Fetal storage of calcium and phosphorus was deficient.

Diagram G. This was a normal rat on a high calcium, low phosphorus intake ( $\text{Ca}/\text{P}$  ratio = 5). The  $\text{Ca} \times \text{P}$  product of the maternal serum at delivery was  $11.5 \times 1.9 = 23.9$ . In this case, fetal storage of calcium and phosphorus was likewise deficient.

As a rule the calcium does not decline below 10 mg., the low level being reached by the fourth or fifth day. It is soon followed by a gradual rise to a concentration of about 11 mg. per 100 cc. However, occasionally, the decline may be more rapid or may continue beyond the fifth day. The serum calcium may fall as low as 7 mg. or even lower. This usually is accompanied by a rise in inorganic phosphorus from about 5.5 mg. at birth to 6.5 mg. or higher. In recent years increasing attention has been given to the relation between the hypocalcemia of the neonatal period and the associated tetany to the function of the parathyroids at birth. Tetany usually develops during the second or third week of life. Bloxson's patient developed tetany at the end of the fourth week. According to Bakwin,<sup>47</sup> the fall in serum calcium, the low urinary phosphorus excretion, the rise in serum phosphorus and the marked tendency to retain phosphate when this is administered may be looked upon as evidence of hypoactivity of the parathyroids in the newborn. An exaggeration of all of these findings may reflect an abnormal depression of the parathyroids of the newborn infant. Bakwin has suggested that cow's milk, because of its high phosphorus content, may be a factor in the tetany of the new born. Vitamin D is not a factor and its administration is reported to be without effect. Administration of calcium salts (chloride, lactate, bromide or gluconate) by mouth has been found effective by some observers but not by all. Bloxson<sup>48</sup> found that the daily administration of 12 gm. of calcium gluconate added to the milk, together with fifteen drops of viosterol, produced no significant change in the serum calcium and no clinical improvement. However, dihydrotachysterol when given in sufficient dose raised the serum calcium to 11.4 mg. and produced complete disappearance of the symptoms.

Tetany of the neonatal period suggests the possibility of variation in functional development of the parathyroids during intra-uterine life and illustrates the dependence of the newborn infant on prenatal factors. Experimental studies completed recently (Sinclair and Bodansky<sup>48</sup>) show that fetal parathyroid development, though constant under a variety of conditions, is nevertheless subject to certain influences. Thus, the parathyroid glands of newborn rats from parathyroprivic mothers are larger than normal, especially if the diet during pregnancy was deficient in calcium. Maintaining the serum calcium at a high level by feeding a diet disproportionately high in calcium is associated both in normal and parathyroprivic rats with the development of fetal parathyroids which are smaller than normal.

The preceding discussion, limited by a consideration of space, does not assume a disregard of other factors which may be involved in the low calcium tetany of the neonatal period. As noted by McQuarrie,<sup>49</sup> the convulsive mechanism in hypoparathyroidism has not been elucidated fully.

## NEONATAL HYPOGLYCEMIA

The relation of antenatal factors to the neonatal course of the organism also is well illustrated by another type of convulsive reactivity; namely, that associated with hypoglycemia. The tendency to hypoglycemia occurs in apparently normal newborn infants. The blood sugar may fall from an initial value of about 50 to 80 mg. to as low as 20 mg., after which recovery to higher levels is relatively prompt. According to Hartmann and Jaudon,<sup>50</sup> the hypoglycemia develops in normal infants because of an incompletely developed opposition to insulin activity. Demonstration of an extremely low insulin tolerance in infants during the first few days of life supports such a conclusion. However, occasionally, the action of insulin is unopposed because of a more serious impairment of the regulatory mechanism as illustrated by a case described by Hartmann and Jaudon in which hemorrhagic destruction of the suprarenals was demonstrated at autopsy. Although glucose was administered at frequent intervals, the blood sugar at one point fell to zero.

The occurrence of diabetes in the mother may result in compensatory hypertrophy or hyperplasia of the islet tissue of the pancreas which in turn may create the difficult, although not insurmountable, problem of maintaining the blood sugar during the neonatal period (White,<sup>51</sup> Wilder<sup>10</sup>). The marked tendency to hypoglycemia in such cases is due to hyperinsulinism. The blood sugar may fall from a concentration of over 200 mg. at birth to less than 40 mg. within as short a period as one hour. Excessive secretion of insulin may be due also to simple physiologic hyperactivity of the pancreas rather than to morphologic changes. Finally, in some infants of diabetic mothers the tendency to hypoglycemia is not much more severe than in normal infants and may be explained on the same basis, that of an imperfect blood sugar-regulating mechanism at birth. According to Sisson,<sup>52</sup> hypoglycemia is nowadays a rare complication in infants of diabetic mothers but may occur if insulin is given to the mother shortly before delivery.

It is known that the thiamine requirement is increased in diabetes and also in pregnancy. The combination of both pregnancy and diabetes well may raise the requirement to a level far above that contained in diets ordinarily regarded as adequate. It has been suggested, though the evidence is inconclusive, that such relative lack of vitamin B<sub>1</sub> may be a factor causing the high incidence of toxemias of pregnancy in diabetic patients and also in producing certain abnormalities (flabbiness and edema) in the fetus (Wilder<sup>10</sup>).

## SUMMARY

The relation of maternal nutrition to fetal development, fetal storage of iron and its relation to anemia in infancy, the distribution of vitamins on

the two sides of the placental barrier, the relation of vitamin K deficit to hemorrhagic disease of the newborn, fetal metabolism of calcium and phosphorus, the relation of parathyroid function at birth to low calcium tetany during the neonatal period and other topics have been reviewed briefly. It is possible that other relations, somewhat more intricate and of greater significance from a clinical standpoint than those considered, would have served as better illustrations of fetal-maternal interdependence. The physiology of fetal circulation and respiration, the placental transmission of disease, the occurrence of fetal malformations, the relation of maternal hormonal imbalance to late toxemia of pregnancy and the effects of toxemia on fetal development are among the numerous problems which are currently under diligent investigation in many clinics and laboratories.

Pregnancy, as previously noted, imposes a burden on the various regulatory mechanisms of the maternal organism. The pregnant organism may or may not succeed in adjusting itself to the many new stresses. It may fail to modify its body economy and to reestablish those regulatory mechanisms embraced by the term "physiologic homeostasis." The fetus, by virtue of its quasi-independent regulatory mechanisms which promote the stability of its own internal environment, is in a measure protected from the stresses and adversities which affect the mother but there are, nevertheless, extrinsic factors acting on the fetus which either may terminate its existence, change the course of its development or determine events during the neonatal period and for a long time thereafter.

While it is appreciated that the experimental method cannot be applied generally to clinical practice, yet, it may not be inappropriate to suggest, in view of the relations involved, that knowledge would perhaps be advanced if the clinical history of the patient, whether child or adult, were to have for its preface a detailed clinical history of the mother, at least for the period embracing his or her own fetal existence.

800 Avenue B.

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The administration of an alkali, such as sodium bicarbonate, with sulfathiazole, and possibly also with sulfadiazine, two derivatives of sulfanilamide, is advised by Leon Schwartz, M.D.; Harrison F. Flippin, M.D.; John G. Reinhold, Ph.D., and Albert H. Domm, M.D., Philadelphia, in *The Journal of the American Medical Association* for August 16 as a means of decreasing incidence and number of crystals of these drugs in the urine.

The four men point out that recent medical literature contains many reports of bloody urine, deficient secretion of urine, urinary stones and other complications associated with the use of these drugs. These kidney complications are due, in part if not entirely, to the presence of crystals of these drugs in the urinary tract and some necessitate a discontinuance of administration at a time when treatment is most desired.

To ascertain the effect of alkali on the incidence and number of crystals detected in the urine of patients receiving sulfathiazole or sulfadiazine, the four investigators administered sodium bicarbonate in an amount equal to that of the drug to 37 pneumonia patients and compared the urinary findings with those of 63 pneumonia patients who were not given an alkali.

## THE SIGNIFICANCE OF ABNORMAL VAGINAL BLEEDING

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ST. LOUIS

GYNECOLOGY

The appearance of abnormal bleeding from the vagina is always of significance and it usually is of sufficient importance to warrant a pelvic examination. The patient herself ordinarily notices any change in the type and amount of menstrual flow but frequently fails to appreciate its significance. Consequently, in many instances patients with advanced malignancy arrive in the physician's office after many months of symptoms. In many other instances the physician himself is responsible for not appreciating the possible significance of abnormal bleeding. Only by education of both the physician and the patient can one hope to see carcinoma of the reproductive tract in its early stages when there is a reasonable chance for a good result.

In the woman the reproductive cycle is marked by the regular appearance of the menstrual flow. This is the indicator for ovarian activity and whenever the ovary functions abnormally it usually is reflected in a change in the menstrual habits. The cycles may stop, they may become irregular or there may be excessive and prolonged bleeding, all of which may indicate disturbed ovarian activity. It is never safe to assume, however, that an alteration of the menstrual cycle necessarily indicates a disturbance of ovarian function. For example, the patient prior to the menopause with carcinoma of the cervix ordinarily will continue to have regular menstrual periods but she also may have excessive bleeding during the period and also bleeding between the menstrual periods. The same type of bleeding is encountered also in hyperplasia of the endometrium. In the patient with carcinoma, failure to make a pelvic examination may jeopardize the patient's life, whereas, in the case of hyperplasia, pelvic examination ordinarily reveals little.

The attitude which should be taken in cases of abnormal bleeding should in large measure be determined by the age of the patient. Bleeding during adolescence has an entirely different significance from bleeding after the menopause. I think the best way of demonstrating the relative frequency of the various causes for abnormal vaginal bleeding is by a table taken from a recent article in the literature<sup>1</sup> showing the causes of bleeding in a series of approximately 4,000 patients. Prior to the age of 20, vaginal bleeding practically never indicates malignancy. Only in the rarest instance is carcinoma encountered. However, it does occur and there are cases on record of carcinoma of the cervix occurring prior to the age of 20. Of all the patients with abnormal bleeding in this age group,

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approximately 35 per cent have complications of pregnancy, primarily abortions. Another 35 per cent have bleeding associated with pelvic inflammatory disease. This sort of bleeding probably is a special case of bleeding arising from ovarian dysfunction and, finally, about 25 per cent of the patients have functional bleeding. I am sure that it is obvious that in this particular age group one would seldom find any reason for removing the uterus. There is every reason, however, for carrying out a diagnostic curettage since in a good percentage of the cases this will reveal placental tissue. In the unmarried patient in whom pregnancy and pelvic inflammation can be excluded there is little need for a curettage since in most instances the bleeding is of functional origin.

The next decade of life, 20 to 30 years, shows essentially the same distribution of diseases. The benign tumors, however, begin to appear as a cause for bleeding. These, of course, are chiefly myomas of the uterus and occasionally endometrial and cervical polyps, carcinoma or malignancy still being rather uncommon. In the next decade, between 30 and 40 years in this particular series of cases, approximately 3 per cent had carcinoma. There is a marked increase in the number of patients with benign tumors and a smaller number with abnormal bleeding associated with inflammatory conditions and pregnancy. As the age approaches the menopause the frequency of malignancy increases but prior to the menopause only in about 10 per cent at the most is abnormal bleeding due to cancer. I think it is worth pointing out also that the incidence of functional and unexplained bleeding remains about the same throughout the years prior to the menopause.

Following the menopause, bleeding becomes of far greater significance. There are numerous reports in the literature<sup>1,3,5</sup> concerning the relationship between postmenopausal bleeding and malignancy and without exception 50 per cent or more of all patients so reported who have abnormal vaginal bleeding, and who have had curettages, are found to have malignant tumors. One can see readily, therefore, how significant postmenopausal bleeding really is. And one can see readily how important it is to consider promptly any such patient as having carcinoma until proven otherwise. Carcinoma found after the menopause occurs usually either in the cervix or the fundus of the uterus. Actually, there are about as many carcinomas of the cervix as there are carcinomas of the fundus after the menopause, whereas, prior to the menopause carcinoma of the cervix is much more common than carcinoma of the fundus. I mention this because a failure to appreciate this fact oftentimes leads to complete hysterectomy in the presence of a carcinoma of the cervix, where that type of surgery usually is not indicated. In general, the patient with postmenopausal bleeding should be curetted. If the curettings show carcinoma of the cervix, appropriate radiation therapy is begun. If the

curettings show carcinoma of the fundus, then it is a matter of opinion whether one decides to give radiation, followed by hysterectomy, radiation alone or hysterectomy alone. In the tumor clinic of Washington University the practice is to give all patients with carcinoma of the fundus preoperative irradiation whenever possible, usually with radium and occasionally with both radium and roentgen ray and, approximately four weeks following irradiation, to do a complete abdominal hysterectomy.

One other word of caution is perhaps in order. Patients frequently are seen with postmenopausal bleeding who have myomatous tumors of the uterus. One should not assume that the bleeding is due to the myoma since it may well be due to carcinoma either of the cervix or of the fundus. If there happens to be a carcinoma of the cervix, in most instances the carcinoma should be treated first and the myoma ignored, for the time being at least. If there happens to be a carcinoma of the fundus, then, of course, complete hysterectomy is usually the procedure of choice.

Postmenopausal bleeding may result from senile vaginitis, cervical polyps and other nonmalignant conditions, but due to the high incidence of carcinoma one is obligated to exclude carcinoma by curettage under anesthesia.

Abnormal bleeding, prior to the menopause and during the climacteric, is due, as I have said, in only a small percentage of the cases to carcinoma. When a carcinoma does occur before the menopause, in the majority of instances it is found in the cervix. Thus one can diagnose it frequently simply by inspection and palpation, confirming one's suspicions, of course, by biopsy. It is important not to assume that because malignancy is less common prior to menopause that all such instances of abnormal bleeding are of endocrine origin. It is also unwise to assume that abnormal bleeding is due to functional disturbances because it is often due to complications of pregnancy, inflammatory conditions or benign tumors. It becomes immediately apparent, therefore, that it is absolutely necessary to examine all such patients to ascertain if possible what may be the cause of the bleeding. If the cervix appears to be healthy and the uterus is not enlarged, one can assume with some degree of confidence that carcinoma is not present.

A report by Hamblen<sup>2</sup> showed the incidence of endocrine causes for bleeding in a group of patients supposedly selected so that endocrine dysfunction was the most probable cause of bleeding. In this group of approximately 514 patients there were 170 in which bleeding was not of endocrine origin. In this group of 170 patients there were 66 incomplete abortions and nine had carcinomas of the fundus. Even when one attempts to select a group of patients which, from their history would appear to have ovarian dysfunction, there still is a considerable number that have complications of pregnancy or have other nonendocrine causes for the abnormal bleeding.

There is a lesson in these observations. One should not proceed to remove the uterus whenever one encounters abnormal bleeding prior to the menopause, chiefly, because there are so many causes for the bleeding which are not indications for hysterectomy. One might even go so far as to state that the presence of abnormal bleeding is more of a contraindication to routine hysterectomy than is the absence of abnormal bleeding. It is much safer to do a subtotal hysterectomy on a patient without abnormal bleeding than it is to do a subtotal hysterectomy on a patient with abnormal bleeding because, in the first instance, there is little likelihood of carcinoma whereas, in the second instance, there well may be carcinoma.

Since I more or less openly have condemned hysterectomy for abnormal bleeding, especially when the uterus is of normal size, one may rightly ask what then should be done? In the patient near the menopause, persistent bleeding from a uterus, which is little if any enlarged, should be an indication for a diagnostic curettage. If carcinoma is encountered then one proceeds to treat the carcinoma. If no carcinoma is encountered either in the cervix or the fundus, one has two courses open to him. The first is to do nothing about it but to await developments but in a fair number of cases, perhaps because the patient may live at a considerable distance and cannot be followed carefully, one should induce the menopause by the use of either radium or roentgen ray. This is a comparatively safe procedure and in most instances is followed promptly by a cessation of all bleeding but, of course, it does lead to symptoms of menopause such as hot flushes and nervousness. This same type of treatment also can be used for those patients near the menopause in which there is a small myomatous tumor of the uterus accompanied by bleeding. Seldom is it safe or desirable to treat patients with climacteric bleeding with endocrine products such as estrogen, progesterone or testosterone until after a diagnostic curettage has been done.

In the earlier years of life, abnormal bleeding has to be approached from a less dogmatic point of view. One hesitates a long time before giving the younger woman who bleeds excessively any roentgen ray or radium therapy. True enough, this will stop the bleeding but at the same time it induces a menopause and this is certainly undesirable. In the adolescent period also, one practically never should use roentgen ray or radium for the treatment of abnormal bleeding. As I pointed out, in the younger years of life the bleeding is apt to be due to complications of pregnancy. I recall vividly one such patient in her twenties who had been bleeding for three weeks and was given 3,000 mg. hours of radium only to have the curettings reported as showing placental tissue. Such errors should not occur and will not occur if a diagnostic curettage is done and the report obtained before the use of any subsequent therapeutic measures.

The problem then is what can be done about

abnormal bleeding occurring during the reproductive years when it is not due to neoplasms. In the first place, a diagnostic curettage should be done to eliminate, in so far as possible, neoplasms and complications of abortion. This should enable one to follow a policy of watchful waiting without too great mental turmoil. Once one has become convinced that excessive or irregular and too frequent flowing is not due to cancer, benign tumors or abortion, there is no particular reason why any active treatment has to be given unless the bleeding is severe enough to endanger health. Once this attitude of mind is attained generally, there will be fewer hysterectomies performed and fewer patients sterilized by roentgen ray or radium when still in their reproductive years. In fact, it is much better to curette patients repeatedly if hyperplasia is encountered than to resort to more drastic measures.

At the present time these patients with more or less continuous bleeding can be treated with endocrine products. In many instances they are ineffective but they do at least provide something with which to work and thereby avoid for a considerable period of time any drastic measures.

Functional bleeding is worthy of special consideration. Amenorrhea or bleeding twice monthly usually do not impair the health but continuous bleeding leads to considerable ill health and, rarely, death has occurred from blood loss due to functional bleeding. The exact cause of the bleeding is not known. It is reasonably certain, however, that ovulation is not occurring and hence that progesterone is not acting. The use of pituitary hormones for this condition is based on the assumption that ovulation may be induced and a normal cycle established. This rarely can be accomplished. There is one other method of approaching the problem that is often successful. This involves the use of progesterone. Progesterone has the property of preventing estrogen deprivation bleeding and also of preventing the onset of normal menstrual bleeding if given in adequate amount. It is logical, therefore, to try it, especially since continuous functional bleeding and hyperplasia are presumably associated with progesterone deficiency. There is an added reason. Some investigators believe that hyperplasia and the associated bleeding are due to hyperestrinism. If so, progesterone is the natural hormone to use because there is ample evidence indicating that progesterone reduces or at least alters the effect of estrogens.

I have given progesterone to several adolescent girls with more or less continuous bleeding with rather uniform results. The general plan has been to give progesterone intramuscularly, 2 to 10 milligrams daily, for from five to ten days. Ordinarily the bleeding decreases markedly after the second and third doses but a small amount of brownish discharge may persist. When the injections are discontinued, one of two things may happen. The bleeding may recur within from forty-eight to

seventy-two hours and persist for four or five days, resembling in every respect a slightly profuse menstrual flow. In every instance in which this result has been obtained the flow has stopped completely after a few days. This bleeding is probably a true progesterone deprivation bleeding. In other cases, usually when the smaller doses were given, the bleeding has stopped but there has been no recurrence as a result of the withdrawal of progesterone.

These results, by themselves, are of considerable interest but the subsequent course has been even more interesting. In most instances several fairly normal periods have followed the progesterone therapy. The first patient treated by this scheme was given crystalline progesterone in 1935. She was 15 years old and had had continuous bleeding for two months. She was given 2.0 mg. daily for five days and the bleeding stopped. Menstrual periods began about a month later and have been quite regular ever since. Another patient of 17 years, who had been bleeding daily for two years, was given 5 mg. daily for six days. The bleeding stopped after the third injection. A copious menstrual period began two days after the last injection and lasted five days. During the next six months the periods were somewhat irregular but there were no prolonged periods and there was no episode of continuous bleeding. I cite these two only as examples of what has occurred. In some cases there has been a recurrence of functional bleeding after several months of normal cycles but the same beneficial results were obtained by a second course of progesterone.

The beneficial effects from progesterone in functional bleeding should not be permitted to obscure the fact that functional bleeding is a manifestation of ovarian dysfunction. As such it may indicate hypothyroidism and many patients with functional bleeding have been relieved permanently by the use of thyroid.

Functional bleeding also can be treated satisfactorily with testosterone. This hormone is in some respects similar to progesterone and it has the advantage of not having to be given daily. Satisfactory absorption is obtained by giving the propionate once or twice weekly whereas progesterone should be given daily. Progesterone apparently is absorbed and destroyed rapidly as evidenced by the fact that bleeding may occur within thirty-six hours after the last injection in some instances. Testosterone propionate is an androgen and it may produce enlargement of the clitoris, some lowering of the pitch of the voice and even hirsutism if given in large amounts for several weeks. I have seen no harmful effects from 100 mg. weekly for three weeks. Testosterone produces inhibition of the pituitary and, hence, some reduction of ovarian function as well as having a direct effect on the reproductive organs. This suppression is not permanent, however, and normal cycles may return following the course of therapy. I have used testosterone in

treating some cases of functional bleeding at the menopause and reserved progesterone for the younger individuals although there is no serious objection to using testosterone in the adolescent girl or young woman, providing the treatment is not continued for more than two or three weeks at one time.

There is also a new preparation called anhydro hydroxy progesterone which is active by mouth. One has to give about twenty times as much by mouth as one gives by injection to achieve the same results. This preparation has been found useful also in the treatment of functional bleeding.

In conclusion I should like to reemphasize once more that one's attitude toward abnormal vaginal bleeding is determined in large measure by the age of the patient and, further, that in practically no instance except possibly in the adolescent girl, is it permissible to institute any form of therapy until after a thorough pelvic examination has been made. Abnormal bleeding occurring during the climacteric is controlled effectively by the use of radium or roentgen ray therapy but this should not be used until a diagnostic curettage has been done to exclude malignant tumors as a cause for the bleeding. After the menopause vaginal bleeding should be considered as evidence of carcinoma until proven otherwise. Functional bleeding during adolescence can be controlled in many instances by the use of progesterone.

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#### IMPROVED METHOD OF DETERMINING LEVEL IN BLOOD OF SULFONAMIDES IS DEvised

A new, rapid, bedside method for determining the amount of sulfanilamide, sulfapyridine or sulfathiazole in the blood stream of a patient is reported in *The Journal of the American Medical Association* for August 9 by A. G. Sheftel, M.D., Beverly Hills, California.

"In the treatment of infectious diseases with drugs of the sulfonamide group," he explains, "it is desirable to maintain an optimum concentration of these drugs in the blood, and therefore periodic tests are essential for best results."

The method Dr. Sheftel devised is, he says, "simple and accurate and can be performed in a few minutes at the bedside or in the office." It is a modification of another method which requires laboratory facilities and for which chemicals are used which deteriorate in time. The chemicals used in the new method are in tablet form and keep indefinitely in dry form. They also work more rapidly. A special color meter has been devised for the test which can be carried in a bag or a pocket.

## THE LOCAL ISOLATION TREATMENT OF BOILS

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When one attempts to review the literature on the subject of furuncles, one is amazed at the steady flow of contributions which has been going on for so many years. The list which one could compile in the line of recommendations for therapy would be of no greater surprise than the volume of the contributions. After analyzing this information, one is struck with several positive conclusions.

1. It seems reasonable to say that any lesion which responds so favorably to such a wide range of therapeutic measures, as one finds in the literature, must have a remarkable tendency toward being a self limiting disease and one which would heal with a minimum number of complications if patients and physicians could control their desires to hasten the relief by some drastic manipulation.

2. Lesions which fail to respond regularly and satisfactorily to any one of the measures advocated, fail because there is something uniformly wrong in the application of nearly every one of these procedures.

3. Reports which neglect to stress in great detail the exact steps of the therapeutic measures which are being presented are certain to be misunderstood, misused and finally discarded as being without value.

The word "boil" rather than the word "furuncle" was selected for the title of this article because everyone knows what a boil is; and when one uses the word "furuncle," he must further qualify his meaning to include or exclude carbuncle. This leaves no doubt that the carbuncle is excluded in the present discussion.

It is my wish to fall in line with those who believe in the conservative treatment of boils. From this point of view a carbuncle is an entirely different disease and seldom should receive strictly conservative management, unless it occurs on the face. The omission of the treatment of carbuncles will avoid confusion.

The "local isolation" of boils is being emphasized because the drainage from such lesions is truly contagious to individuals who may come in contact with the material. This is particularly true for the victim who has the boil and has manifested his sensitivity to its organisms in the very fact that he has the infection.

It is not unusual to have several members of a family at one time seeking treatment of boils. Also patients have been told how the disease has gone from one to another in their families over a period of months. Investigation nearly always will give a clear explanation. It is usually one of negligence.

A pimple may have been squeezed with the fingers. It may have been opened with a flamed needle but the pus was caught on a handkerchief which was placed in a pocket and later used on the face and hands, or the pocket may have been contaminated for a future inoculation. Serum and blood which ooze from such tiny lesions contain organisms and this material may be absorbed by a shirt sleeve, a collar or an under shirt only to be rubbed over wide areas of skin.

Many barbers are still guilty of spreading boils with unsterilized razors, brushes, clippers and combs. They seem to take great joy in breaking every pimple they see; and are, perhaps, none too careful in the asepsis of their technic.

Lesions on the back of the neck are common not only because of the texture of the skin and the irritation caused by collars, but also because collars catch the atmospheric dirt that works down from above. One always picks up a garment by the back of the collar, taking it from a hook which thousands of other hands and collars have touched to add materially to the contamination of one's neck.

School years have their share of furuncles. With their attention fixed on the lecturer students unconsciously play with money, pocket articles, the rungs of chairs, trouser cuffs, socks, ankles and shoes when knees are crossed, books which have been on the floor, soiled bandage scissors and stethoscopes. In pathology laboratories they behave as though all germs died with the patient. Students will sit for hours listening to lectures with their contaminated hands flat against cheeks or cupped to hold the chin.

The possibilities of serious complications or fatal terminations of boils are not at all understood by the average layman. Laborers feel a little ashamed of themselves for not having had the necessary resistance to escape from the infection. Their next aim is to show their courage and stamina to their fellow workmen by refusing to give in to the lesion and by demonstrating a total disregard for any measure of hygienic care. It is not uncommon to have men appear for treatments rolling up pus-matted sleeves which had been covering dozens of boils in all stages of healing.

Experiences like these should arouse one's curiosity. The patients are often excellent physical specimens who are in good condition from hard work, who eat satisfactory diets and may be working in fresh air and sunshine. Of course, not all of them are like this but the point which I wish to make is that when the case is investigated, one will be surprised at the lack of evidence pointing to the cause for the first boil.

Hygienic conditions of the skin do play a great part; but when the right germ comes along, when it gets into the proper area for inoculation and irritation, the furuncle will start regardless of the patient's age, sex or occupation. I dare say that this group of doctors has had its share of boils and

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yet this group represents a rather ideal concentration of prophylactic knowledge.

A great deal of literature to date has been devoted to the pathology, bacteriology, immunology and clinical therapeutics of boils, and still no two physicians treat them exactly alike. This is true because no single method has been found to be superior to all others.

The problem presents itself like this: Furuncles develop from the inoculation of virulent organisms into the skin, via the hair follicles, sweat glands or abrasions. If individuals could be immunized for all of the organisms producing furunculosis, there would be no more boils. Obviously, this cannot yet be done. If the skin could be sterilized and the virulent organisms could be kept away from the skin, there would be no boils. It would be impractical to carry out such a regime as this although individuals who have trained themselves in observance of strict cleanliness for the skin and clothing and in control of the hands are least troubled by furuncles. It then follows that while one has means of reducing the incidence of boils, anyone may become the victim of a boil at some time. The fact that the individual has the boil is some measure of his susceptibility to the organism which caused it. Skin tests with autogenous vaccines usually bear out this point. Exudates from such a lesion carelessly handled would then be a powerful menace for subsequent inoculations. Since it is not advisable to isolate the individual from exposure to furuncular infection, would it not seem wise to isolate the boil from the rest of the body? It is reasonable and it can be done most effectively.

The idea of maintaining a high degree of cleanliness in the management of boils is not a new one, but the thought of isolating a boil will evolve new rules for securing and holding this ideal which is so desirable. Behind the plan are several fundamental principles which need to be explained.

1. The skin must be thoroughly cleansed and must be kept that way. This means that it does not matter whether the boil is in the incipient stage or in an advanced stage of drainage. The skin about the lesion should be washed with soap and water, shaved, cleansed with soap and water, then with alcohol and ether. The shaving should be done in the direction in which the hairs lean. Then the razor will not cut so closely that the skin will be injured. The area cleansed must be a large one. This is especially true when there are multiple boils or even a single boil which has already begun to drain. By preparing large areas, the skin at the margins will support adhesive tape readily, required to immobilize the dressing, without the danger of exciting new lesions beneath the tape.

The soap and water cleansing is done on the first day that the patient is seen and is not repeated thereafter.

2. In order to obtain a dry skin, to effect a penetrating germicidal action in the glands, follicles and creases of the skin and to set a limiting boundary

of local isolation by the dye ingredient, a good skin antiseptic should be applied freely. The material should be painted at the margins first and completed near the boil. For an accurate application about the boil a cotton applicator is most useful. The antiseptic should be applied daily, first on the removal of the dressing and again after the boil has received its daily attention.

3. Dry dressings are used throughout. If one prefers, he may use warm moist compresses during the incipient stage of the boil until the lesion points or develops its head. This trial on wet dressings is a dangerous privilege to give a patient. Often it will be kept up too long and the boil will be found to have ruptured into the compress. When this happens, the isolation is ruined. The moisture in the compress will carry the organisms to all parts of the dressing, to the neighboring skin surfaces and its hair follicles and through the dressing to the clothing, bed linen, and thence to other parts of the body. Wet dressings used on draining lesions furnish one of the best means for spreading contamination that a doctor could devise.

Along with negligence in the hygienic care of boils on the part of the patient, the use of wet dressings for draining boils on the part of the physician will be found to furnish the finest crops of boils that one could possibly cultivate. Pus, heat, moisture, irritation and spread of contamination make an ideal combination for the propagation of trouble. Writers who insist on making reviews of everything reported in the literature have not yet discovered the pitfalls of wet dressings. Others who have advocated cleanliness and dry dressings for boils have not laid enough stress on behalf of their cause to have their plan accepted by the practicing physician.

Let me compare the two dressings. The wet dressing might have one advantage if the solution were hypertonic but its advocates seldom mention this specification. The heat of the water quickly cools to the body temperature and is of temporary benefit. Additional hot solution poured on the dressings saturates the gauze and everything about the patient until he is miserable. Patients also run the risk of being burned by careless adding of heated fluids. The maceration of the skin caused by wet dressings is undesirable. The spread of purulent drainage is inexcusable. The nuisance of the dressing, the annoyance and disturbance of important rest during the night by frequent changes of the compresses are definite objections.

It has been shown by studies in vascular diseases that blood vessels, which are not partially occluded by organic disease but because of some degree of arteriolar spasm have a diminution in blood flow, will effect a maximum relaxation under the simple conservation of the body's own heat. In other words, wrapping a patient in blankets will produce vasodilatation and cause the skin temperatures to approach blood heat.

In like manner, by using a rather bulky, dry

dressing, one can bring about all the local vasodilatation one needs. If the patient wants more heat, it may be applied by a heating pad or water bottle to the outside of the dressing without any difficulty. Patients seem to be more comfortable with the dry dressings than the wet ones. If a dry dressing is properly anchored so that it will not get loose or twist about an extremity, other than a small spot overlying the draining boil, there will be negligible contamination beyond the lesion itself. This statement can be proved to one's satisfaction.

Having cleansed the area about the boil, having shaved it and painted the skin with an antiseptic, two or three small gauze sponges are placed directly over the lesion and covered with large sponges and an abdominal pad. In case of a boil on an extremity, an entire segment of the arm or leg should be prepared. Covering the boil similarly with gauze, a dry gauze or Reed roll wrapped about the segment will serve to isolate the area and retain the heat. These dressings are held fast with strips of adhesive attached to the prepared skin at the margin.

Any other measure the physician may wish to use can be carried on without disturbing this technique. Roentgen ray may be given through the dressing. Tin, manganese, vaccine, toxoid, bacteriophage and other remedies may be used if the boil is kept isolated in the manner described.

4. I advise against incising boils. One should avoid making a boil bleed. Wait until pointing occurs and then with a sharp tooth pick or pointed applicator stick dipped in liquefied phenol one may prick tangentially the top of a sloughing boil to avoid making painful pressure, or he may gently rotate the point into the necrotic hair follicle until some of the pus is liberated. The secret is to not do too much. It is dangerous to drill through the posterior wall of protective granulation tissue. Carbuncles, or spreading cellulitis, may be started by this accident. If the phenol stick is against one's better judgment, use the sharp point of a knife and just prick the necrotic skin over the boil. Do not search for septae even with a phenol stick. Too many patients will complain of sore regional glands the next day. Phenolization of the top of a boil hastens necrosis of the skin and facilitates drainage. It seldom needs to be done more than twice, i. e., on two consecutive days. Phenolization of the center of a boil is of doubtful value. One has difficulty getting the phenol into the boil. It leaves the stick at the surface of the boil and if one attempts to run it below the opening, he will cause bleeding, severe pain or actual damage to the protective wall of granulation tissue. The core will form about as fast without outside help.

As pus escapes during the procedure, it should be collected on cotton applicators touched to the opening and gently twisted between thumb and finger to wind the exudate out of the cavity to the swab. Never squeeze a boil. Slight pressure on one side at a time may be made safely with a cotton

applicator when the core has become fairly well liquefied. In the stage of induration any pressure is dangerous.

Again let it be repeated, this does not apply to lesions on the face. In this region it is too dangerous to use the phenol stick. Nothing should be stuck into the boil. If it is definitely ripe, one could prick the necrotic spot with a sharp instrument just to decompress it. Do not plunge the instrument into the lesion. Touch the point to the necrotic skin and cut away from the boil. Never press the tissue about it.

5. After the boil is opened and every day thereafter, two applications of an antiseptic should be made, one before and one after the boil is given attention. The dry dressing which follows must not slip, even as it is being put on. The exudate which soaks into the little dry sponges directly over the lesion quickly dries and seals them to the boil. This prevents further leakage of exudate until the next dressing. The dressings must be done every 24 hours. If they are neglected before the core is expelled, the exudate will build up pressure and the patient will again complain of pain.

When the dressings are changed, the crust which plugs the opening will come out with the dressing and the pent up fluid must be immediately caught on applicators to prevent its flow over the skin.

Depending on a number of variables, it may require from two to four days from the time the boil is opened for the core to become dislodged. It should never be extracted until it is entirely autolyzed from the wall of granulation tissue. During the stage of core separation, fairly large quantities of pus will be released at each dressing. As soon as the core is removed, the drainage practically ceases.

Although the pain is greatly relieved when the boil opens, it stops when the core is dislodged. The edema subsides, the skin wrinkles again, the large hole which held the core quickly fills with fibrin and it is but a short time until the opening contracts and is ready to form a final crust. One soon learns to judge from the drainage on each dressing just when to tease the gauze off the crust without dislodging it. After this is accomplished, the antiseptic is painted over the crust too. Subsequent dry dressings need not be changed oftener than every two or three days, until the crust falls off. The size of the protected area of skin is maintained but the extra padding for the preservation of heat usually is discarded after the core is expelled.

The physician need not wear gloves for the dressings unless he wants to do so for his own protection. The washing, shaving, application of solutions and removal of the small sponges should be done with instruments. As long as one's hands are clean it is permissible to handle the rest of the bandaging without instruments.

The question may arise, are the results worth the effort? They are if one follows the rules. One

may expect failure when the areas of prepared skin are too small and adhesive is stuck to hair, the marks are not removed each time and strips are reapplied to new areas, dressings come off or slip or are discarded before the lesion is healed; when one starts wet dressings on a draining boil, uses an ointment which lets the pus seep out the sides or permits the dressing to slide off the lesion; when diabetics are not recognized; when body hygiene is neglected; when daily dressing are put off because of Sundays and holidays. If the physician conscientiously does a good job, he will not only be rewarded for his trouble but he will find opportunities for applying the principles to some of his other dressings.

It is imperative that the patient be instructed in every detail expected of him. He should understand the aim of the treatment. He should be told how boils are spread, how dangerous they are and how they can be prevented. While the boil is being treated, the rest of his body should have daily soap and water baths. There should be an immediate change to an entirely different set of clothing and everything in the old set should be dry cleaned, laundered or autoclaved. Do not miss the hats, hair brushes and combs, overalls, overcoat and car keys. There should be a check-up on all personal belongings the man handled just before and during his illness. In spite of the fuss he will raise, he really should not work until he has completely recovered. Because of the danger of osteomyelitis, children should be kept from games for at least two months after an infection.

Another probable question one may want to ask is, aside from possible clinical evidence, is there any other proof to show that the isolation treatment of boils may be worth the extra trouble? The evidence related here has not been completed in numbers one would care to present in a statistical report but a study is being made of the relative effects of this procedure on patients with respect to the reduction of skin organisms.

1. Swabs moistened in saline and rubbed in a circle about the unruptured or ruptured boil before the skin had been cleansed planted numerous colonies on agar plates. After soap and water cleansing only an occasional colony appeared. After the antiseptic had been applied the skin cultures were usually sterile. All this perhaps is to be expected.

2. Once the boil had been opened and had received the routine care and dry dressing for twenty-four hours, the dressing was removed and the swab wiped about the boil as close as three-quarters inch from its edge. This was done before the daily antiseptic had been applied and yet these cultures were repeatedly sterile. Of course, it does not represent a true skin culture and I do not want to give the impression that there is not a single bacterium left on the skin because that is not true. However, I feel that the experiment carries a relative value when compared with wet dressings, or

when compared with cases in which no skin cleansing of any kind has been employed.

It is my sincere belief that the local isolation treatment of boils is more than a passing fancy and I feel it is worthy of serious consideration.

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## THE DIAGNOSIS OF PERNICIOUS ANEMIA

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Progressive pernicious anemia (Addison's anemia, Biermer's disease) was designated in 1855 by Thomas Addison in clear-meaning, concise words as a disease that makes its approach in so slow and insidious a manner that the patient hardly can fix a date to the onset of his languor which shortly becomes so extreme. It is a disease of middle life, chiefly in males of the white race and in temperate zones. It has been said erroneously never to occur in a full-blooded Negro.

While there is yet an inadequate knowledge of the etiologic activating agent or agency, it is accepted as a deficiency disease, the deficiency being in the anti-anemic factors of which there are two types and two sources. Through an interaction within the stomach of the extrinsic factor derived from food and an intrinsic factor produced by the gastric mucosa, there is formed the anti-pernicious anemia element which is stored in the liver. When withdrawn from the liver as needed, at least one of its functions is to maintain normal red blood cell numbers and types. The clinical picture of pernicious anemia may result when either the nutritional extrinsic factor or, specifically, the internally manufactured intrinsic factor is deficient or lacking. The latter is associated with an almost invariable gastric anacidity or achylia. Whether heredity, infections or toxemias play a role in causation has not been demonstrated convincingly. There is much ground for considering each a possible contributing agent.

The disease in its natural course goes through cycles of remissions and relapses or exacerbations of varying degree and duration until death. With each succeeding relapse the difficulty of securing definite and permanent improvement is increased and the duration of the remission tends to grow shorter with each. By the time the condition is diagnosed the untreated patient has a life expectancy of not more than two to three years. As recent as 1926, or fourteen years ago, when Minot and Murphy<sup>1</sup> made their first contribution on response to liver therapy, pernicious anemia was considered a fatal disease and comparable to the leukemias or any untreated malignant neoplasm. Recovery following a diagnosis of the condition

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<sup>2</sup>Presented at the 83rd Annual Session of the Missouri State Medical Association, Joplin, April 29, 30, May 1, 1940.

was accepted as proof of a mistaken opinion. Due to the brilliant studies of Minot and Murphy, Castle and coworkers, Whipple and associates, Isaacs, B. Cornell and Cyrus C. Sturgis, there is no longer need for this to be a fatal disease. Therapy is available and effective if instituted early in the course of the disease and continued. The first essential to successful treatment lies in a correct diagnosis. To facilitate the early and certain recognition of this disease, the diagnostic criteria are presented, discussed and given a means of evaluation that make for ease of interpretation.

The diagnostic blood findings appear in table 1. Attention is called particularly to the first five items. All the blood constituents, with one notable exception, the fluid, are decreased. All formed elements, the oxygen-carrying substance, hemoglobin, and the blood proteins are below normal in value and often markedly so. Stained blood films reveal such diagnostic features as the immature large red cells in the forms of megalocytes, gigantocytes, normoblasts, megaloblasts and giantoblasts, the ovalocytosis, polychromatophilia, basophilic stippling, hypersegmentation of neutrophilic leukocytes and a decrease in platelets.

Table 1. *Diagnostic Blood Findings in Pernicious Anemia*

1. Erythrocytopenia—decreased number of red blood cells, often to 1,000,000 or less.
2. Leukopenia—total white blood cell count of 5,000 or less.
3. Thrombocytopenia—decrease in platelets, often to extreme low values.
4. Hypochromemia—decrease in hemoglobin but not in proportion to the decrease in number of red blood cells.
5. Hypoproteinemia—blood plasma protein less than 6 per cent.
6. Anisocytosis with the presence of large immature red cells as megalocytes and gigantocytes.
7. Nucleated red blood cells with the presence of normoblasts, megaloblasts or giantoblasts.
8. Poikilocytosis, with a tendency to oval forms—ovalocytosis.
9. Reticulocyte percentage increase at onset of remissions, whether spontaneous or induced by therapy.
10. Polychromatophilia.
11. Basophilic stippling.
12. Color index above 1.0—a hyperchromic or rarely normochromic anemia.
13. Volume index above 1.0—a large red cell anemia.
14. Hypersegmentation of polymorphonuclear neutrophils.
15. Relative lymphocytosis—35 to 40 per cent common.
16. Delayed coagulation time.
17. Eosinophilia—5 to 8 per cent values common, especially following liver therapy.

Items 6, 7, 13, 12, 9, 14, 1 and 3, in the order named, have the greatest significance and value.

Pernicious anemia is more than a disease of the blood. Diagnosis therefore can be made more definite and more certain by adding other features to the grouped blood findings. With patients under treatment and in many early cases, one must make use of all the diagnostic criteria, a well coordinated history and clinical judgment. Blood examinations must be repeated often and the findings correlated with careful analysis of clinical and other laboratory data; and even this sometimes fails (especially in the aplastic form) and bone marrow punch or biopsy may be needed. In terminal stages the bone marrow hyperplasia may, through exhaustion, be-

come a hypoplasia (fig. 1) and yield a blood picture of an aplastic anemia. Standard textbooks on clinical diagnosis, clinical pathology and hematology, give descriptions of tests and explanation of procedures that are employed.

From personal experiences, caution seems imperative. The criteria apply to those cases which have not been modified by the specific antipernicious anemia principle as liver, liver extract or gastric mucosal extracts. Following adequate treatment all laboratory findings, with the exception of the achlorhydria, return to or become normal and the clinical symptoms except those referable to cord damage largely or entirely disappear. It is striking that free hydrochloric acid does not reappear in gastric secretion even after large doses of the accepted therapeutic agents.<sup>2</sup>

In the untreated, as a rule in the inadequately treated and in patients free of complications, the usual and expected diagnostic criteria are well established. For convenience and emphasis these diagnostic criteria are grouped on a mechanical chart using twelve segments (fig. 2) which are displayed in succession by a moving front until all are visible. Each of these segments has a value of one twelfth of a circle and represents 8.33 per cent of the surface area. A summation of these twelve gives one 100 per cent, a value indicating the ideal or perfect score in the diagnosis of pernicious anemia. In the typical case one may and often does encounter such a score. Patients presenting values of 66 per cent or more are considered possible or probable cases of pernicious anemia, depending upon which value they more nearly approximate. One is doubtful of the diagnosis or only suspicious of the disease when the value falls below 40. Further study and repeated blood counts are then in order. While the various criteria will be discussed briefly and their importance presented, one must bear in mind that the assembled findings carry weight and should be used in arriving at the diagnosis. Complicating starvation, hemorrhage and severe infections, especially of the streptococcus hemolyticus and of certain parasites, may modify greatly the blood picture and some of the clinical features.

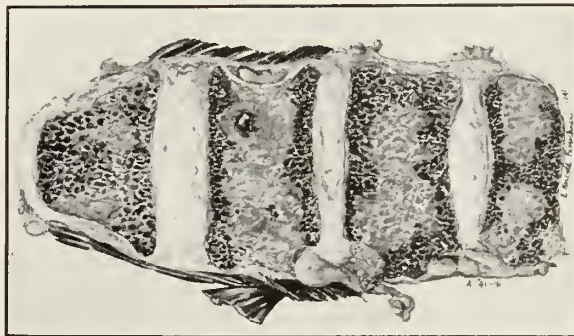


Fig. 1. Yellow, fatty bone marrow replacing red (hypoplasia) in vertebral bodies in an aplastic pernicious anemia. (Natural size.)

DISCUSSION AND EVALUATION OF THE  
CHARTED CRITERIA (Fig. 2)

1. *Chronic Idiopathic Remittent; Progressive Malignant Course.*—This disease typically is chronic, of idiopathic or unknown origin, runs a remittent, relatively intractable, progressively malignant course, and if untreated is ultimately fatal. Impairment of strength is a prominent and common complaint, varying from simple fatigue to exhaustion. The remissions which are so strikingly a clinical feature may occur spontaneously or may result from one or another therapeutic measure.

2. *Glossitis, Digestive Disturbances With Achlor-*

*hydria.*—A recurrent glossitis, or sore tongue, with atrophy of the papillae, and a smooth, shiny mucosal surface, especially on the lateral margins, is an early and troublesome symptom present in approximately 90 per cent of the cases.<sup>3</sup> An achylia gastrica, or at least an atrophic gastritis, with an absence of free acid is found in almost 100 per cent of the established cases. This is related to and found with the deficiency of the intrinsic anti-anemic factor. The gastrointestinal symptoms, of which diarrhea is the chief one, may be secondary to the anacidity or be a primary factor. There is pronounced alteration in the function of the intestinal tract manifested generally by the presence of a fermentative putrid colitis or enterocolitis. The glossitis and enterocolitis may in some unexplained way interfere with the formation or activation of a possible extragastric intrinsic factor.

3. *Posterior Lateral Sclerosis, Disturbed Locomotion, Paresthesias.*—Disturbed locomotion, paresthesias and subjective neurologic symptoms pointing to cord damage play an important part in the clinical picture. In some patients the symptoms of degeneration of the posterior lateral columns of the spinal cord may simulate tabes or a combined sclerosis. About 70 per cent of the patients have a tingling and numbness in the feet and legs and occasionally in the upper extremities. Evidences of degeneration of the posterior lateral columns of the cord with a negative Wassermann are almost within themselves diagnostic of pernicious anemia. This finding may be manifest before the blood picture is well developed, and once evident shows little response or improvement to treatment.

4. *Erythrocytopenia.*—The red blood corpuscles in the blood decrease from a normal number of approximately five million to two million, or commonly less. The presence of some complication, as a severe infection or bone marrow hypoplasia, may cause the red blood cell count to drop to very low values and prevent its rise to an appreciable degree, even under heavy specific therapy.

5. *Abnormal Red Cells.*—Abnormal red blood cells are present as large sizes, nucleated forms and those showing basophilic stippling and polychromatophilia. This is typically a large red cell anemia (macrocythemia). The most characteristic feature of the blood findings in the acute stage and at the beginning of relapses is the presence of megalocytes, gigantocytes, megaloblasts and gigantoblasts. These are indicative of reversion to an embryonic state of development. Some hematologists will not consider the diagnosis of pernicious anemia seriously unless megalocytes are present. The large red cells are more richly endowed with hemoglobin than the adult cell (normocyte) and have a tendency to oval shapes (ovalocytosis).

Nucleated forms indicating hyperplasia of bone marrow are common. They often occur as normoblasts and megaloblasts in "showers" representing blood crises. Their continuous absence in a case of pernicious anemia is always a grave prognostic

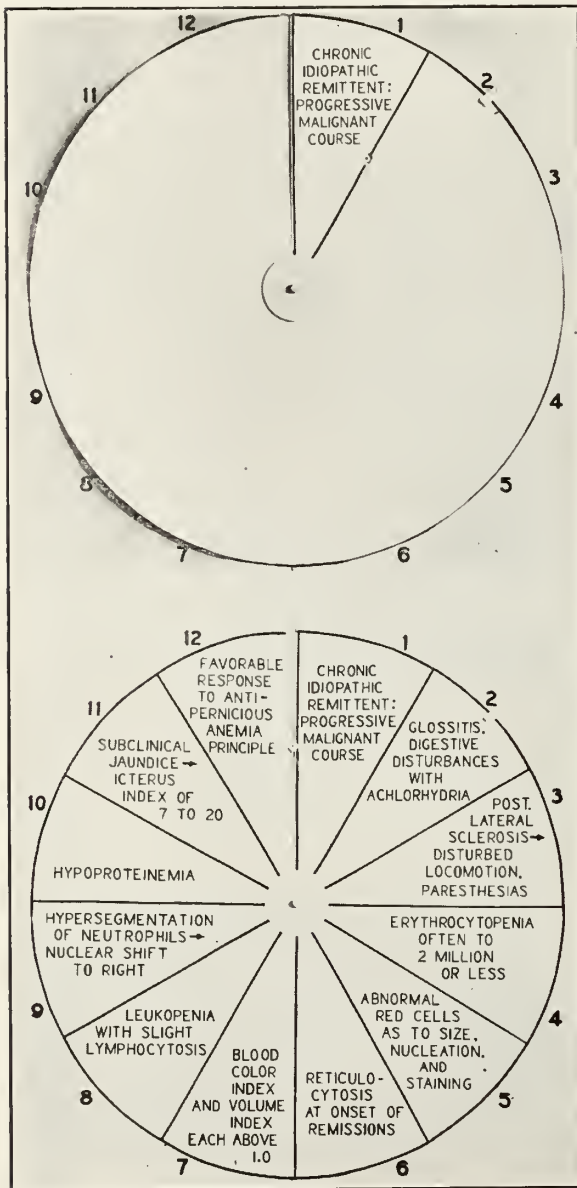


Fig. 2. Mechanical chart grouping the diagnostic criteria with each segment representing 8.33 per cent and yielding 100 per cent positive findings in a typical case of pernicious anemia.

finding and points to a hypoplastic bone marrow or an aplastic type anemia.

Changes in staining reaction as basophilic or punctate stippling and the more diffuse basic staining as polychromatophilia are more or less constant findings in the untreated case. Both are found most commonly in the nucleated red blood cells of abnormally large size.

6. *Reticulocytosis*.—A rise in reticulocyte percentage invariably is associated with remissions, whether spontaneous or induced by therapy. This response occurs with liver, liver extracts, gastric mucosal extracts or liver extracts and gastric mucosal extracts uniformly in the hyperplastic or usual type of pernicious anemia, and very poorly or not at all in the aplastic form. Reticulocyte increase is a definite means of measuring bone marrow response. The persistence of a low percentage of these young forms indicates a bad prognosis.

A reticulocyte rise does not occur in normal individuals even under heavy dosage of the anti-anemic principle. Under proper and adequate therapy in pernicious anemia the first important evidence of the response is the appearance of an increase in their numbers in the peripheral blood. They usually begin to increase in from three to eight days after specific therapy is begun and the rise continues for the subsequent three to eight days when a maximum of from 10 to 20 per cent or even higher is reached. From the beginning of therapy the response is completed within from three to four weeks. As the red blood cell count approximates normal level, the reticulocytes fall to a low normal or slightly subnormal value (1 per cent or less). Accompanying the rise of these as evidence of remission, there is as a rule an increase in the blood platelets and the granular leukocytes.

7. *Blood Color Index and Volume Index Each Above 1.0*.—In the untreated and uncomplicated case the hemoglobin is reduced relatively less than is the number of red blood cells. This results in a color index above the value of 1.0. It invariably is accompanied by an equally high or higher volume index because the average size of the red blood cells is characteristically larger than that of the normocyte. The value for each is usually 1.2 or higher. The volume index is more dependable because the one outstanding morphologic feature of the disease is the macrocytosis. The hyperchromatism, giving a high color index, and the macrocytosis, with a high volume index, readily serve to differentiate this condition from the common run of secondary anemias with their hypochromatism and a color index below 1.0 (often very much below as 0.6, 0.5 or less), from microcytosis with a volume index below 1.0, and from the less common normocytic hypochromic anemias.

8. *Leukopenia With Lymphocytosis*.—A total white blood cell count of less than 5,000 per cubic millimeter (leukopenia), associated with a polymorphonuclear neutrophil percentage below the average normal of 60 to 70 (neutropenia), and a

lymphocyte value above the normal, 20 to 30 per cent (lymphocytosis), are consistent findings. Together these have diagnostic value, but they each may be modified by certain drugs, infections, bone marrow hypoplasias and transfusions.

9. *Hypersegmentation of Neutrophils—Nuclear Shift to the Right*.—A pronounced polysegmentation (hyperlobation, hyperpolymorphism) or the presence of exaggerated numbers of nuclear lobations as five, six, seven, eight, nine, ten or more in the neutrophils, giving a nuclear shift to the right of Arneth or Schilling is a significant finding. In conjunction with a leukopenia, a neutropenia and a lymphocytosis, it deserves much weight. Such hypersegmentation is rarely seen in any other condition and is the rule in pernicious anemia although its absence is encountered occasionally. Cooke<sup>4</sup> found the average distribution of lobes in the neutrophils in normal individuals to be: in class 1, ten cells; in class 2, twenty-five cells; in class 3, forty-seven cells; in class 4, sixteen cells; and in class 5, two cells (class 5 includes all neutrophils having five or more nuclear lobes or segments). The finding of more than 3 per cent of neutrophils in class 5 in a normal person is most unusual, while in pernicious anemia the value is commonly above 5 per cent and 20 has been recorded. An increase in those having four segments further shows a tendency to a right shift.

10. *Hypoproteinemia*.—The total blood plasma protein is typically less than 6 per cent (normal 6.8 to 8.8 per cent). This finding which is easily determined may indicate other conditions as nephrosis, glomerular nephritis, severe ulcerative diarrheas, massive hemorrhage, protein starvation or severe hepatic disease, but other simple laboratory tests, a physical examination and a well taken history should determine the cause easily.

11. *Subclinical Jaundice*.—A skin peculiarly bearing a delicate lemon yellow tint or color shade with well preserved subcutaneous fat having a similar yellowish tinge is suggestive always of this disease. This is not a clinical jaundice or often an easily recognizable pigmentation. To determine it, to evaluate its degree, to measure its fluctuations and to differentiate the hemolytic from the non-hemolytic anemias, either the van den Bergh or the icterus index test is of value. The latter, which determines the bilirubin content of blood, is preferred because of its simplicity. Normal values are from 4 to 6. In pernicious anemia readings between 7 and 20 are the rule and the upper value is approximated particularly during acute exacerbations, as when the total red blood cell count is falling rapidly. One must be guarded against a false reaction of carotinemia. With the rise in blood bilirubin content an increase in urobilin and urobilinogen in the urine and feces occurs.

12. *Favorable Response to Antipernicious Anemia Principle*.—Usually, although not always, under adequate treatment the blood picture returns to normal, most of the clinical manifestations disap-

pear and little or no evidence of pernicious anemia can be found. This response to more or less specific therapy serves as a confirmatory diagnostic therapeutic test. Adequate treatment causes a rapid disappearance of almost all the signs and symptoms of the disease, prevents the development or progress of others and restores the patient to well-being and a useful, gainful livelihood. The manifestations that point to central nervous system damage show the least response to treatment and, in fact, if they are well established, show little if any improvement.

One of the most brilliant chapters in medicine, that which saw and was responsible for the change of progressive pernicious anemia, a disease always fatal, to one now little feared, has been well recognized and credited to men highly deserving of all the honors that have been theirs.

#### SUMMARY

1. Pernicious anemia is a disease in which all the diagnostic acumen, keenness of clinical judgment and every available criterion are necessary for its recognition in the early stage when therapy promises most and yields the best dividend and in the patient whose blood picture and clinical manifestations have been modified or eradicated by therapy.

2. A method of evaluation of the diagnostic criteria on a segmental or percentage basis is recorded as an aid in arriving at a means of more or less mathematical measurement.

3. Patients showing positive percentage values of 66 or more are considered to be proved cases of pernicious anemia. Those having values of 44 to 66 per cent are possible cases but need further study for verification. Patients showing less than 40 per cent should be considered as doubtful of having the disease.

University of Missouri.

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#### REDUCES WEIGHT 300 POUNDS IN 18 MONTHS BY MEANS OF DIET

Reporting the case of a woman 35 years of age weighing 479½ pounds who, by supervised dieting without injury to health, reduced her weight 300 pounds in eighteen months (nine of them in a nursing home), James J. Short, M.D., New York, says in *The Journal of the American Medical Association* for August 16 that "this case emphasizes again that there is apparently no limitation to the amount of excess weight which can be removed with perfect safety. It also indicates that in grossly overweight persons rapid weight reduction may be maintained over considerable periods without injury to health."

## CAVERNOUS SINUS THROMBOPHLEBITIS

### THE USE OF SERUM AND CHEMOTHERAPY IN ITS MANAGEMENT

#### A REPORT OF SEVEN CASES

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Little progress has been accomplished in the management of cavernous sinus thrombophlebitis since its original description more than one hundred years ago. There continues to exist much confusion in its early diagnosis. Problems arising in the management of the condition present many difficulties.

Cavernous sinus thrombophlebitis is a secondary infection which may result from any one of several causes. It produces local and general symptoms which usually follow an acute course. The thrombophlebitic process often spreads to the opposite dural venous sinus and orbit and produces the gravest symptoms which, as a general rule, end fatally. It is with the hope of instilling a greater respect for the inciting causes and producing a closer scrutiny for early signs and symptoms which may be of life-saving value that this study is presented.

Cavernous sinus thrombosis was first described by Abercrombie<sup>1</sup> in 1818 from autopsy findings. Not until twenty years later was the disease described clinically by Vigla.<sup>2</sup> Fifty years after the original description by Abercrombie, Knapp<sup>3</sup> recorded the condition as a definite disease entity.

#### ETIOLOGIC FACTORS

The cause of the condition is fairly well established. The majority of cases are due to infection by the staphylococcal group of organisms. Cultures taken from the original focus of infection and the cavernous sinus at autopsy usually reveal the presence of this organism. Occasionally, however, cultures show a mixed growth of staphylococcal and streptococcal strains, both from the original focus of infection and the secondary site in the cavernous sinus. The organisms first gain entrance into the superficial and deep facial plexus of veins after which they are transmitted into the cavernous sinus. The migration of the organisms into the sinus is facilitated by the lack of valves in the anterior facial veins. Any infection of the upper lip, nose, eyelids and teeth is a potential source of cavernous sinus thrombophlebitis. All such lesions should be treated with the greatest care. The high mortality associated with staphylococcal infections is due in a large part to the tendency for an infective thrombosis to be a feature of the disease. Of importance, but to a lesser extent, infections of

From the Otolaryngological Services of the St. Joseph and Research Hospitals.

the tonsils and bony sinuses may lead to a thrombophlebitis of the sinus. In omitting a detailed anatomic description of the venous relationship of these structures to the cavernous sinus, it is sufficient to say they all have a more or less direct connection with this dural venous sinus.

#### PATHOLOGIC FACTORS

Failure to permit the bodily defensive mechanisms to follow their normal course in localizing the original infection may lead to cavernous sinus involvement. Manipulation of any sort, whether intentional or accidental, interferes with the protective processes taking place and opens numerous avenues of infection which often lead to death from cavernous sinus thrombophlebitis. The extraction of teeth occasionally opens avenues of infection with which the bodily protective mechanisms are unable to cope.

The condition produces distant as well as local pathologic changes. The pathologic findings in case 6 illustrate the tremendous odds which one must combat in the management of cases once established. At autopsy in case 6 a marked swelling of both orbital regions was noted. A partially healed abrasion was seen just below the right nostril. The left pupil was larger than the right one. Upon opening the skull the brain bulged and an excessive amount of clear cerebrospinal fluid was found. The superficial vessels of the brain were distended markedly. Cut sections of the brain revealed congestion throughout. The venous sinuses were opened and in each cavernous sinus a poorly formed, rather friable grayish-red thrombus was found, the one in the right being considerably larger than that in the left although neither appeared to occlude the sinus completely. Grossly, the lungs appeared normal. Their external surfaces were smooth but numerous small, bluish-red discolorations were seen on the surfaces resembling hemorrhagic areas. In the right lower lobe there was a circumscribed dark congested area roughly triangular in shape measuring 5 centimeters in length which was rather typical of a hemorrhagic type of infarction. The greater blood vessels and bronchi showed no changes. Microscopic sections of the brain revealed marked dilatation of the pia arachnoid spaces. Sections of the lungs showed numerous tiny abscesses in which could be seen clumps of bacteria, coccoid in form. Another section revealed an area of hemorrhage and necrosis typical of a hemorrhagic infarct. The liver sinusoids appeared to be overdistended with blood. The spleen showed a moderate degree of congestion of pulp. The epithelium of the convoluted tubules of the kidneys was swollen and granular in appearance. Sections of the thrombi including portions of the cavernous sinus revealed polymorphonuclear infiltration of the sinus walls and red blood cell, pus cell and fibrin thrombus formation.

A final diagnosis of bilateral cavernous sinus

thrombosis, cerebral congestion, miliary pulmonary abscesses, pulmonary infarction, congestion of the liver and spleen and mild cloudy swelling of the kidneys was made. From these findings one can understand readily the hopeless outlook held in cases once established. If a hopeful prognosis is to exist, the value of early diagnosis and therapy must be fully appreciated.

#### SIGNS AND SYMPTOMS

The clinical picture of cavernous sinus thrombosis is a variable one. The infection does not always follow the same course. In the early stages it may produce diametrically opposed clinical pictures. Depending upon the virulence of the organism and the resistance of the patient, the course may be that of an acute fulminating septicemia or one, on the other hand, without symptoms of general sepsis. Clinical symptoms and pathologic findings often show little relationship to each other. Because of the variable features of the disease there is often confusion in the early management of the condition when properly directed therapy would be of life-saving value. The hopeless prognosis associated with the infection when it is once established should produce a respectful attitude toward potential sources of cavernous sinus infection.

The often described typical picture of exophthalmos, papilledema, septic temperature and ocular muscle paralysis is seen only occasionally. If and when this picture does exist the patient is beyond medical or surgical aid. Hence the importance of early detection cannot be overemphasized. One should be suspicious of any orbital congestion and septic temperature associated with an infected lesion of the upper lip, nose, eyelids or gums. The early diagnosis is based on the presence of a lesion in the venous area of the cavernous sinus and upon the appearance of any one of several signs and symptoms arising from an involvement of the sinus.

Unilateral periorbital swelling or conjunctival edema is usually the first warning in the early stage of the infection. The disease may then follow one of two courses, the septic form or the pyemic form. The septic form runs a stormy course and usually ends in an early death. General symptoms of a severe toxemia, high septic temperature, restlessness, disturbances of the sensorium, headache and occasionally albuminuria characterize this form. The pyemic form is characterized by remittent temperature, chills, lassitude, headaches and often metastatic involvement.

Local findings, particularly concerning the eye, are important in either form. Often one is able to detect the earliest sign of cavernous sinus involvement by intra-ocular examination. Repeated ophthalmoscopic examinations should be made in every case in which involvement of the sinus is suspected. Contrary to general belief, the presence of papilledema is rare. If present, the infection has already progressed to a late stage and an increase in intracranial pressure exists. According to

Braun,<sup>4</sup> when papilledema is present, the changes in the optic nerve are in all probability due to circulatory changes in the brain and its membranes, causing an increase in cerebrospinal fluid. This increase of fluid extends into the subarachnoid space about the optic nerve and interferes with the normal lymph flow in the perivascular lymph spaces in the nerve so that edema of the nerve results. The prognosis in this type of case is poor and invariably death results.

Dilatation of the retinal veins is probably the most important single finding early in the disease. This finding indicates that interference with the venous circulation of the cavernous sinus has occurred and the infection is beginning to involve the intracranial elements. Following the appearance of periorbital swelling, conjunctival edema and dilatation of the retinal veins, paralysis of one or more of the extra-ocular muscles may occur. Rarely, *except in advanced cases*, is fixation of the eyeball observed. Of all the extra-ocular muscles the external recti are the ones most frequently involved. In the majority of cases, limitation rather than fixation of ocular movements occurs. Ptosis and sluggish pupillary reactions frequently are observed.

An important diagnostic and prognostic sign is an extension of the swelling from one eye to the other eye. With the appearance of this sign the prognosis becomes very poor. The clinical findings in the early stage of cavernous sinus involvement usually are confined to one side of the head. However, after several days, extension to the opposite eye may occur. This is due to the thrombophlebitic process extending from the originally involved cavernous sinus through the circular sinus to the opposite dural venous sinus. This is one means of differentiating between the orbital edema and exophthalmus of cavernous sinus disease and that due to orbital cellulitis or to frontal and ethmoid sinusitis. The disease practically always remains unilateral in orbital cellulitis and sinusitis.

The diagnosis of cavernous sinus thrombophlebitis can not always be made with certainty during the early course of the disease. As pointed out by Eagleton, the clinical evidence is not always sufficient to warrant a positive diagnosis of cavernous sinus involvement. However, in view of the high mortality rate, every suspected case should be treated as one of threatened cavernous sinus infection until proven otherwise. In this way only will the mortality rate be reduced.

Because the initial manifestations are varied and the classical signs, i. e., exophthalmus, papilledema, septic temperature and ocular muscle paralysis, appear late if at all, every patient with an infected lesion of the upper lip, nose, eyelids or gums, in whom there is an associated periorbital swelling, conjunctival edema, septic temperature and dilated retinal veins, should be regarded as one with threatened thrombophlebitis of the cavernous sinus.

#### REPORT OF CASES

The cases of cavernous sinus infection presented were treated with sulfonamide compounds and staphylococcus antitoxin.

Case 1. E. S. C., a boy, aged 13, was admitted to the St. Joseph Hospital on May 5, and was dismissed on May 14, 1938.

*Onset.*—Two days previous to admission the patient developed a small circumscribed swollen area on the left upper eyelid. During the night before admission there developed a rapidly spreading reddened area around the pustule which finally involved both the upper and lower eyelids. On the following morning the eye was completely closed and there was a marked amount of edema involving the left periorbital area. A tentative diagnosis of threatened cavernous sinus thrombophlebitis was made.

*Physical Examination.*—The patient was well developed. Admission temperature was 100.2 F. The patient complained of pain in the left eye. He appeared to be in a semistuporous condition and became irritable on being examined. There was an extensive reddened area of swelling around the left orbit including the upper and lower eyelids. The eyeball was barely discernible through the slitlike palpebral fissure. A small amount of blood tinged purulent secretion exuded from the external canthus. A moderate degree of exophthalmus was present. Movement of the eyeball to the left was limited. Ophthalmoscopic examination revealed markedly dilated retinal veins in the left fundus. No papilledema was observed.

*Course.*—The patient was given sulfanilamide after admission into the hospital. His condition, however, continued to become worse. Toward evening of the first hospital day the patient became stuporous. By the following morning he could be aroused only with difficulty. The temperature was of a septic nature and had risen to 103 F. Cultures taken from the eye on the previous day proved to be hemolytic staphylococcus aureus. Staphylococcus antitoxin, 50,000 units, was given in divided doses. A transfusion of 250 cubic centimeters of blood was given also. The patient still showed little improvement and on the following morning a marked edematous swelling of the right eye was observed. Exophthalmus was present in both eyes, particularly the left. Fundus examination revealed dilated retinal veins but no papilledema. Another transfusion was given and 40,000 units of staphylococcus antitoxin administered. By evening the patient showed marked improvement and had a good night's rest. The next afternoon the patient suddenly became violently ill, vomited and sank into a semistuporous condition. The temperature rose to 104 F. Paralysis of the external rectus of each eye occurred. Staphylococcus antitoxin, 20,000 units, was given. The prognosis at this point appeared to be poor. Eyeground examination showed marked dilatation of the retinal veins. About noon of the following day the temperature began to fall and by evening the patient was much better. The patient continued to show improvement and within three days the edema and exophthalmus of the right eye entirely disappeared. The swelling around the left eye gradually subsided also. The patient was released a week later in good condition.

*Laboratory Work.*—The red blood cell count remained more or less constant throughout the course of the infection, varying between 4,800,000 and 4,900,000 cells per cubic centimeter. The leukocyte response to the infection was poor. The white cell count varied between 7,800 and 10,850. At no time was the neutrophil percentage over 73.

Cultures taken from the eye showed a growth of hemolytic staphylococcus aureus. The staphylococcus titer was zero. Blood cultures also were negative. Urine analysis revealed a trace of albumin on three occasions.

Table 1. *Physical Findings in Seven Cases*

Case	Lesion	Condition	Orbital Edema	Ophthalmoscopy Papill- edema	Dilated Veins	Exophthalmus	Extraocular Movements
1	Pustule left upper eyelid	Semistuporous. Septic temperature	Left eye. Spread to right eye on 4th day	None	Present (bilateral)	Bilateral	Limitation of external recti
2	Right upper and lower 3rd molars removed	Irritable. Septic temperature	Right eye completely closed	None	Present	Right eye	Ptosis. Limitation of right external rectus
3	Acute left frontal sinusitis	Semicoma. Septic temperature	Left eye. Spread to right eye on 3rd day	None	Present (bilateral)	Bilateral	Limitation of left external rectus
4	Pustule left lower eyelid	Restless. Septic temperature	Left eye completely closed	None	Present	Left eye	Limitation of all movements of left eye
5	Postoperative submucous resection and bilateral antrotomy	Lethargic. Septic temperature	Left eye partially closed	None	Present	Left eye	Paralysis left external rectus. Limitation left internal rectus
6	Pustule on nose	Lethargic. Septic temperature	Right eye. Spread to left eye on 3rd day	None	Present (bilateral)	Bilateral	Limitation of external recti
7	Pustule on right zygoma	Restless. Septic temperature	Right eye partially closed	None	Present	Right eye	Slight limitation of right external rectus

Seven cases, including the one described, have been tabulated in order to facilitate a rapid comparison of their various features (table 1).

## COMMENT

Although it is probably true that the diagnosis can not be made with certainty in some of the early cases, there are certain clinical features which should be regarded as early signs of a developing cavernous sinus thrombophlebitis. Once the infection has become established there is little hope of recovery. Eagleton<sup>6</sup> has reported a few cases in which the thrombosed cavernous sinus was opened and packed after evisceration of the orbit, with

recovery. According to him, this radical procedure, in spite of its relatively small chance of success, is all that can be offered in definite cavernous sinus thrombophlebitis. This hopeless outlook necessitates early detection and early treatment if any success is to be had in the management of the infection.

With the advent of the sulfonamide compounds and staphylococcus antitoxin a more hopeful outlook exists at present. In view of the prevalence of the staphylococcus organisms in this infection, sulfathiazole would seem to be the drug of choice of the sulfonamide group. This drug has proved to be effective as well in mixed infections of the staphylococcic and streptococcic organisms. The

Table 2. *Therapeutic Results in Seven Cases*

Case	Illness on Entry	Culture of Lesion	Drug	Serum	Termination
1	2 Days	Hemolytic staphylococcus aureus	Sulfanilamide	110.00 units staphylococcus antitoxin	Recovery in 12 days
2	5 Days	Nonhemolytic streptococcus	Sulfanilamide	None	Recovery in 10 days
3	5 Days	Hemolytic staphylococcus aureus	Azosulfamide and sulfathiazole	80,000 units staphylococcus antitoxin	Recovery in 10 days
4	7 Days	Nonhemolytic staphylococcus albus	Azosulfamide	None	Death in 2 days
5	4 Days	Hemolytic staphylococcus aureus	Sulfanilamide	60,000 units staphylococcus antitoxin	Recovery in 12 days
6	8 Days	Nonhemolytic streptococcus	Azosulfamide	10,000 units staphylococcus antitoxin	Death in 2 days
7	6 Days	Hemolytic staphylococcus aureus	Sulfanilamide	60,000 units staphylococcus antitoxin	Recovery in 12 days

simultaneous administration of staphylococcus antitoxin can not be overemphasized.

It is fairly well established that the sulfonamides neither neutralize toxins nor stimulate leukocytosis. Woods,<sup>7</sup> Stamp<sup>8</sup> and Selbie<sup>9</sup> have shown that sulfanilamide inhibits the utilization of products synthesized by the bacterial cell which are essential to the growth and metabolism of the cell. However, the bacteriostatic effect of the drug does not occur until the previously utilized material has been exhausted. Hence, there exists a definite "lag phase" during which the growth of the microorganisms is not inhibited by the presence of the sulfonamides. Thus, one can appreciate the need of an immediate therapeutic effect in fulminating infections. Staphylococcus antitoxin exerts its effect immediately and should be given as early as possible in combination with a sulfonamide compound. There is sufficient evidence to indicate that a combination of the two is much more effective than either alone.

Whitby<sup>10</sup> also has shown there is considerable evidence that the sulfonamide group of drugs exerts its action by inducing bacteriostasis and that the final elimination of the infection requires the cooperation of the immunity mechanisms of the host. For this reason, therefore, he urges the use of staphylococcus sera in conjunction with the sulfonamides when this type of infection exists. Butler<sup>11</sup> reported several cases of severe staphylococcus cellulitis which showed rapid and complete recovery following the use of the antitoxin with sulfathiazole. Stookey and Scarpellino<sup>12</sup> state that experimental evidence shows that the invasive properties of the staphylococcus are inhibited when the patient shows a high titer of natural antitoxin or passive immunization by the administration of staphylococcus antitoxin. They point out that early treatment with antitoxin and in adequate amounts is necessary to prevent irreparable tissue damage.

The favorable outcome in three of the reported cases, in which the prognosis seemed to be hopeless, was due in our opinion to the combined use of the antitoxin with a sulfonamide drug (table 2).

#### SUMMARY

Repeated ophthalmoscopic examinations should be made in every case in which there is an orbital swelling associated with an infected lesion of the face. Cavertous sinus thrombophlebitis is an acute disease respecting no age group; it is characterized by septic temperature, disturbances of the sensorium, headache, an infected lesion in the venous area of the cavernous sinus, orbital swelling and dilatation of the retinal veins. Serum and sulfonamide drug therapy, preferably sulfathiazole in view of recent results, should be instituted early in every case in which involvement of the cavernous sinus is suspected. Otolaryngologists should keep this condition in mind when investigating any acute, infected lesion of the face.

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## PREGNANCY COMPLICATED BY CARCINOMA OF THE CERVIX

### REPORT OF A CASE

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AND

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ST. LOUIS

Pregnancy is complicated by cancer of the cervix about once in 2,000 cases according to Sarwey<sup>1</sup>; DeLee reports an incidence of 1 in 10,000 pregnancies; Crossen's figures coincide with DeLee's, while Neilson estimates that 1 in 20,000 pregnancies has cancer of the cervix. It is most common in multigravidae between 30 and 40 years of age as would be expected from the incidence of carcinoma of the cervix generally. Cancer of the cervix is probably less common in pregnant women than in nongravid multiparae of the same age group since many women having cervical cancer are sterile due to the condition of the cervix.

It was formerly thought that pregnancy accelerated the growth of cancer of the cervix, but considerable doubt has been cast on this theory by the work of Slye<sup>2</sup> in mice and that of Martzloff<sup>3</sup> in humans. But if pregnancy does not necessarily change the course of the cervical carcinoma, the latter certainly unfavorably influences pregnancy. Abortion occurs frequently. If the patient reaches term, labor becomes extremely dangerous. In Sarwey's series of 608 cases,<sup>1</sup> the mortality during labor and during the puerperium was 43.3 per cent. This report was made in 1889, but in 1918 Bainbridge<sup>4</sup> still gave a mortality rate of 43 per cent and added that 60 per cent of the infants were lost. Many patients died undelivered while in labor due to shock and exhaustion or from a ruptured uterus resulting from failure of a rigid, carcinomatous cervix to dilate. Other causes of death were (1)

From the Ellis Fischel State Cancer Hospital, Columbia, Missouri.

intra-uterine infection from an infected ulcerated cervical lesion and (2) cervical laceration with fatal hemorrhage.

The treatment of carcinoma of the cervix complicating pregnancy must depend on the extent of the disease and the duration of the pregnancy. If the cancer is discovered early and it is localized to the cervix, all efforts should be directed at saving the mother. Newell and Scrivner<sup>5</sup> advise radical hysterectomy followed by roentgen radiation in clinical groups with lesions of I and II grade during the first four and a half months of pregnancy. For patients with III and IV grade lesions they use radium application to the cervix followed by supravaginal hysterectomy and roentgen radiation. If any active treatment is instituted in the first half of pregnancy, it almost always necessitates sacrificing the fetus. Mundell,<sup>6</sup> in a collected series of cases, found that of thirteen patients treated with radium in the first three months of pregnancy, all aborted.

In the second and third trimesters the treatment is more difficult to decide upon. Each case must be individualized. When the tumor has extended into the parametrial regions, it may be advisable to avoid treatment until the infant has been delivered. Newell and Scrivner advise radical operation and irradiation for a gestation of four and a half to seven months in patients with I and II grade lesions or 4,000 mg. hours of radium applied to the cervix with screening to protect the fetus. For groups with III and IV grade lesions, during this period of gestation, they advise a high supravaginal hysterectomy followed by radium and roentgen ray therapy. These are merely arbitrary rules; each case should be studied individually. We do not agree that radical hysterectomy is the method of choice in treating any carcinoma of the cervix.

With a carefully selected plan of treatment, it is not always necessary to choose between the life of the mother and the life of the baby. It has been known for many years that roentgen rays have a deleterious effect on the fetus causing abnormal mental and physical development, and it had been assumed that radium was equally dangerous. In recent years, however, a number of cases has been reported which would lead one to doubt this. Mundell,<sup>6</sup> in a paper which deals primarily with the effect of irradiation on the fetus, reports forty-three cases of pregnancy in which irradiation was given for some reason. There were thirteen cases in which miscarriage followed the application of radium during the first three months of gestation and three cases in which it followed radium treatment in the middle of pregnancy. "There were eight patients treated with roentgen ray or radium who subsequently had grossly abnormal babies. Of these, there was one patient who was treated by radium at the sixth month." All other patients had roentgen ray therapy. There were twenty-two cases, including Mundell's own, who received radium therapy and subsequently had normal

babies. Mundell's patient had a total of 5,400 mg. hours in the fifth and sixth months of gestation. Nine of these children were followed and reported normal at ages varying from 2 to 20 years.

In 1927, Mundell<sup>7</sup> had presented a much more gloomy view on the effect of radiation on the fetus, but most of the cases reported had been treated with roentgen ray. It is still true today that when one expects to deliver a live baby, roentgen ray therapy should not be used because of its definitely proven deleterious effects on the mental and physical development of the fetus. This does not imply that there is any qualitative difference between roentgen rays and gamma rays. The explanation for the difference in action lies in the fact that radium therapy can be given with only a small amount of radiation reaching the fetus, while with roentgen radiation there is necessarily a much larger portion of the abdomen exposed to the rays and more scattered radiation.

Treatment of cancer of the cervix is indicated even in groups III and IV lesions in the latter half of pregnancy and should be directed at controlling the growth of the tumor and cleaning up an infected, ulcerated lesion. We think that radium may be used safely to do this. The purpose of this treatment may be, in hopeless cases, to make cesarian section a safer, cleaner operation.

Cesarian section, of course, is essential in the elective treatment of pregnancy complicated by cancer of the cervix. Sarwey's and Bainbridge's figures on the mortality of these patients during labor are proof of that. It is extremely dangerous to allow a carcinomatous cervix to dilate and tear enough to allow a baby to be delivered through it.

The choice of the type of section should depend upon the extent of the disease. Perhaps some sections could be followed by a radical operation. In badly infected cases a Porro section is indicated unless one must cut through cancer to do it. In types I and II cancers, in which there is minimal infection, there are advantages to a classical operation, thus avoiding the possibility of cutting through cancer in the lower uterine segment and leaving the uterus which may prove useful in subsequent radiation therapy.

It is advisable to perform the section about two weeks before the estimated date of confinement since most of the patients are multigravidae and a precipitated labor may prove fatal.

In the case reported, the patient was treated with radium and delivered by classical section. It will be noted that the fetus presented by the breech. Crossen<sup>8</sup> advises version when radium is used to increase the distance between the fetal brain and the radium. We are not certain when the fetus is large enough to make external version possible whether it is more advisable to expose the head or the breech to gamma radiation. Nerve tissue in a seven or eight months fetus is rather well differentiated and probably is much more resistant than sex cells. It is possible, however, that even though

nervous tissue may not be damaged directly, the growth of the brain may be retarded by the effect of radiation on the centers of ossification in the fetal skull. The fact that most mental abnormalities in babies who had received irradiation during their intra-uterine life are associated with microcephaly, possibly may be explained by the effect of irradiation on the skull rather than the brain itself. Crossen's advice should probably be followed, if possible, since it is preferable to deliver a mentally normal sterile infant than a fertile idiot.

#### REPORT OF CASE

M. G., white female, aged 32, gravida III, para II, was seen November 3, 1940, at the St. Louis County Hospital. She gave a history of productive cough, chest pain and dyspnea of four years duration associated with episodes of asthenia and weight loss. Two years previously the patient had had two small hemoptyses and since then the sputum often had been bloody. The patient had been amenorrheic since May 28, but in the two months prior she had had irregular vaginal bleeding of minimal amount. Blood Kahn test was positive. The patient was given two injections of neoarsphenamine and five injections of bismuth during her observation. Biopsy of the cervix revealed squamous carcinoma. She was hospitalized and three attempts to establish pneumothorax were only partially successful in obtaining collapse.

The patient was transferred to the Ellis Fischel State Cancer Hospital on December 28, 1940. She appeared in good general condition and stated that she felt very well. Examination of the abdomen revealed a symmetrically enlarged uterus, the McDonald measurement being 25 cm. Fetal heart tones were not audible at the time of admission but appeared one week later, 144 per minute, and remained stable from that time until delivery. The accessory signs of pregnancy were apparent. The date of confinement was estimated to be March 4, 1941. Abdominal roentgenogram revealed a well formed fetal skeleton of approximately seven months gestation with the head in fundus. The blood pressure was 125 mm. systolic and 100 mm. diastolic; the pulse was regular. The cervix was twice enlarged, mobile and the signs of Chadwick and Hegar were prominent. In the center of the anterior lip, a 1 cm. diameter, indurated nodule was palpated. There was nothing to suggest parametrial invasion by either vaginal or rectal palpation. Examination of the chest revealed limited excursion of the left upper chest with fine rales and absent breath sounds in that region. Roentgenogram of the chest showed partial collapse of the left upper lobe, a disseminated reinfection type of tuberculosis and a cavity in the lateral superior aspect of the left upper lobe.

Urinalysis was abnormal only in the presence of minimal albumin. The red cell count was 3,850,000, white cell count 8,100 and hemoglobin 10.7 gm. (75 per cent); the Schilling count was not unusual. Tubercle bacilli were repeatedly stained from direct sputum smears. Blood Kahn test was positive. Nonprotein nitrogen was 27 mg. per 100 cc. Fasting blood sugar was 81 mg. per 100 cc.

Three attempts to establish artificial pneumothorax were unsuccessful because of dense tubular adhesions and the procedure was abandoned. The patient was kept on absolute bed rest. Intravenous arsenicals were not administered since radiation therapy was to be employed. During hospitalization, prior to delivery, the patient was given five 1 cc. intragluteal injections of bismuth salicylate. Tissue obtained from the St. Louis County Hospital of cervical biopsy was seen histologically to be epidermoid carcinoma, grade III.

Intracavity radium therapy was administered January 3, 1941, the dose being 3,350 mg. hours. Two cm. tubes, each containing 10 mg. and filtered by 1.0 mm. of platinum were employed, one being placed in the distal portion of the canal, one in the sagittal axis in each lateral fornix and one in the coronal axis across the portio, the latter three being encased in a 1 cm. gauze wrapping. The patient stood this procedure well. She was closely observed for activation of labor but this did not occur.

On February 5, 1941, during the ninth lunar month of pregnancy, classical cesarean section was performed under novocain spinal anesthesia. The patient stood this procedure quite well. The postoperative course was uncomplicated and wound healing was normal. The infant weighed 5 pounds, 3 ounces, and was normal in every determinable respect. Cord blood gave a negative Kahn reaction. The baby progressed normally and at discharge weighed 6 pounds, 3 ounces.

Deep roentgen ray therapy to the pelvis was begun February 24, 1941, but the patient was unwilling to complete the treatment and signed herself out of the hospital under protest. Arrangements had been made to treat her for the pulmonary tuberculosis in a state sanatorium but she declined this opportunity also. At the time of her departure she had received 650 roentgens to each of four 10 by 15 cm. pelvic portals; 200 kilovolts, 1.0 mm. copper, 50 cm. distance.

Pelvic examination on March 5 revealed a soft, healed cervix with no evidence of active tumor and complete absence of induration of the parametria.

In reporting this case, we are not suggesting a routine form of treatment for carcinoma of the cervix complicating pregnancy; we believe routines should be discarded and each case individualized and treated with careful consideration of both the pregnancy and the malignancy.

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#### SAYS CIVILIAN CONTACTS COMPLICATE PROBLEMS OF MILITARY SANITATION

Although the problems of military field sanitation are important and complicated, "they are less serious and less difficult to solve than are some of those created by contact between the troops and the civilian population," W. A. Hardenbergh, Colonel, Sanitary Corps, United States Army, Washington, D. C., declares in the July-August issue of *War Medicine*, published bimonthly by the American Medical Association, Chicago, in cooperation with the Division of Medical Sciences of the National Research Council, Washington.

For the solution of these problems, Col. Hardenbergh says, "efficient local and state health departments are needed, with the fullest and most sympathetic cooperation given and received at all times. The present arrangements contemplate such cooperation, with an officer of the United States Public Health Service acting as liaison officer, in order that the fullest possible health protection can be obtained by the joint action of all agencies engaged in health work."

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SEPTEMBER, 1941

## EDITORIALS

### THE FBI AND NATIONAL DEFENSE

The Federal Bureau of Investigation, which is responsible for investigating and handling all violations of laws affecting the internal security of the United States, desires to present its national defense program before component county medical societies. It is the belief of Mr. J. Edgar Hoover, Director of the Bureau, that presentation of the program to representative groups will result in more intelligent, whole-hearted cooperation with law enforcement officials throughout the country and that the intensive investigative effort of the Bureau against forces seeking to undermine the security of the nation will be aided.

The Federal Bureau of Investigation was placed in charge of this phase of national defense by the President in the summer of 1939. Conferences were held with governors of states and mayors of many cities in an effort to work out a general plan. Meetings have been held with law enforcement officers throughout the nation with demonstrations by experts from the technical laboratory of the Bureau, instruction in investigative procedures in intelligence matters and discussion illustrated by specific cases of the assistance the general public can give.

County medical societies may obtain a presentation of the work of the Bureau and explanation of the aid that can be given the Bureau by request to the Missouri State Medical Association or to either of the Federal Bureau of Investigation Special Agents in Charge in Missouri, Mr. Dwight Brantley, 707 U. S. Court House, Kansas City, Missouri, or Mr. G. B. Norris, Post Office Drawer V, Plaza Station, St. Louis.

### PHYSICAL FITNESS OF AMERICAN YOUTH

Physicians long have stressed the importance of the annual physical examination. Results of medical examinations made so far under the Selective Service Law of 1940 indicate that annual physical

examinations would have made a vast difference in the number of men classified as unfit for military service; in other words, in the health of American youth. Many of the conditions from which the selectees suffer are remedial, often preventable.

Tabulations have been made by the National Headquarters of the Selective Service System and by the office of the Surgeon General of the Army on the primary causes of disqualification. In order of percentage the causes of disqualification are defective or deficient teeth, eye diseases, diseases of the cardiovascular system, musculo-skeletal diseases, nervous and mental diseases, ear, nose and throat diseases, hernia, diseases of the respiratory system, venereal diseases, foot diseases, overweight and underweight, diseases of the genito-urinary system, endocrine disturbances, varicose veins, mouth and gum diseases, skin diseases, diseases of abdominal viscera, hemorrhoids.

Rates of disqualification under the Selective Service Act of 1940 are approximately 10 per cent higher than those observed during most of the period of the World War. Many factors invalidate comparison, however. Diagnostic technics are improved, well illustrated by present facilities for detection of early tuberculosis. Physical and mental standards of requirement are higher than during the World War, the requirements for present selectees being much more strict than for obtaining life insurance. There is a great difference in the immediate urgency of creating a military force. In 1917-1918 the draft was an emergency measure developed after the country was at war and committed to raising and transporting a large army.

Nevertheless, a large proportion of men in the most healthy age group is being classified as physically or mentally unfit for general military service and many for defects that are remedial or preventable.

The correction of defects in this group is of importance not only because of military man power but from industrial and public health viewpoints. Remedial care is indicated for this group but even more greatly indicated are extended public health programs that will prevent such impairments during the growth period of American youth.

## NEWS NOTES

The annual meeting of the Missouri Tuberculosis Association will be held at Kansas City on September 26 and 27 at Hotel Muehlebach.

Drs. C. C. Dennie and Charles K. Shofstall, Kansas City, were guests of the Riley County (Kansas) Medical Society at Manhattan, Kansas, on July 10. Dr. Dennie spoke on "Dermatosis in Infants and Children" and Dr. Shofstall on "Routine Office Procedures in the More Common Pharyngeal and Nasal Conditions."

Dr. Ira H. Lockwood, Kansas City, presented an address at the Midsummer Radiological Conference in Denver, July 31, August 1 and 2. His subject was "Carcinoma of the Skin."

Dr. G. Wilse Robinson, Sr., Kansas City, was the guest of honor at a buffet and party given by his family and the staff of the Neurological Hospital on August 1 in celebration of his seventieth birthday.

Dr. James A. Atkins, Lamar, was elected a district governor of Rotary International at a meeting of the organization in Denver in June. Dr. Atkins' district includes Missouri, Kansas, Arkansas and Oklahoma.

Dr. J. L. Myers, Kansas City, was the recipient of a gold medal at a recent meeting of the Kansas City Society of Ophthalmology and Otolaryngology. The medal was bestowed in appreciation of his activities in advancing the society and his service to it. Dr. Myers has been secretary of the Otolaryngeal Department of the American Academy of Ophthalmology and Otolaryngology since 1920.

The International Assembly of the Inter-State Postgraduate Medical Association of North America will meet in Minneapolis, Minnesota, October 13 to 17. Headquarters will be in the municipal auditorium. A program of scientific and clinical sessions will be held each day beginning at 8:00 a. m. Approximately eighty-five teachers and clinicians will appear on the program. Preassembly and postassembly clinics will be conducted in the Minneapolis hospitals on the Saturdays preceding and following the meeting. The registration fee for the session will be \$5.00. A list of speakers at the session appears on page 29 of the advertising section.

Information cards will be sent from the American Medical Association about September 1 to every physician in the United States and Canada. The information secured is to be used in compiling the seventeenth edition of the American Medical Directory. The directory is prepared at regular intervals in the Biographical Department of the American Medical Association. The last previous edition appeared in 1940. In it, as in no other published directory, are dependable data concerning physicians, hospitals, medical organizations and activities. The directory provides full information concerning medical colleges, specialization in the field of medical practice, memberships in special medical societies, tabulations of medical journals and medical libraries. Physicians are urged especially to state whether or not they are on extended active duty for the medical reserve corps of the United States Army and Navy. The card should be filled out and returned promptly whether or not a

change has occurred in any points on which information is requested. Changes of addresses up to March 1, 1942, should be reported. Should a physician fail to receive or misplace the card a duplicate may be obtained from the American Medical Association.

## ORGANIZATION ACTIVITIES

### DR. WALTER BAUMGARTEN ELECTED SECRETARY

Dr. Walter Baumgarten, St. Louis, was elected Secretary of the Missouri State Medical Association at a meeting of the Council on July 20. Dr. Baumgarten is also Editor of *THE JOURNAL*.

## MISCELLANY

### 1941 LEGISLATION

House Bill No. 201 was signed by the Governor on August 4, making it effective as a law on October 10, ninety days after the adjournment of the General Assembly. House Bill No. 201 reads as follows:

#### An Act

Requiring every person licensed under the provisions of Article 1, Chapter 59, Revised Statutes of Missouri, 1939, to practice medicine or surgery in this State to register biennially with the State Board of Health, providing for the method of application and the fees for registration, the issuance of certificates of registration, and display of the same, requiring the State Board of Health to be notified of changes in the location of the registrant's office, requiring retired licensed practitioners of medicine and surgery to file affidavits with the State Board of Health in lieu of annual registration, providing for the disposal of registration fees and penalties for failure to register.

*Be it enacted by the General Assembly of the State of Missouri, as follows:*

Section 1. Every person licensed under the provisions of Article 1, Chapter 59, Revised Statutes of Missouri, 1939, to practice medicine or surgery, or both, in this State shall on or before the 31st day of December in the year in which this Act becomes effective and biennially on or before the 31st day of December of each odd numbered year thereafter apply to the State Board of Health for a certificate of registration for the ensuing biennium which application shall be made on a form to be furnished by the State Board of Health, which application shall state the applicant's full name and his office and residence address and the date and number of the license of such applicant issued to such applicant for the practice of medicine or surgery, or both, and such other facts as shall tend to identify the applicant and his license to practice medicine or surgery, or both, as the State Board of Health shall deem necessary. The State Board of Health shall on or before the 1st day of December of each odd numbered year mail to each person licensed to practice medicine or surgery, or both, in this State at the last known office or residence address of such person a blank form for application for registration. The failure to mail such form of application or the failure to receive same shall not, however, relieve any person of the duty to register and pay the fee required by this Act nor exempt such person from the penalties provided by this Act for failure to register.

Section 2. Upon due application therefor and upon submission by such person of evidence satisfactory to the State Board of Health that such person is licensed to practice medicine or surgery or both in this State, and upon the payment of fees required to be paid by this Act, the State Board of Health shall issue to such applicant a certificate of registration under the seal of said State Board of Health, which certificate shall recite that such person is duly registered for the biennium specified. Such certificate of registration shall contain the name of the person to whom it is issued and the office address and residence address of such person, the date and number of the license to such person to practice medicine or surgery, or both, and such other information as the State Board of Health shall deem advisable. Every person practicing medicine or surgery, or both, shall, upon receiving such certificate, cause the same to be conspicuously displayed at all times in every office maintained by such person for the practice of medicine or surgery, or both, in this State. If such person maintain more than one office in this State for such practice the State Board of Health shall without additional fee issue to such person duplicate certificates of registration for each office so maintained. If any registrant shall change the location of such registrant's office during the biennium for which any certificate of registration shall have been issued by the State Board of Health such registrant shall, within fifteen (15) days thereafter notify the State Board of Health of such change whereupon said State Board of Health shall issue to such registrant without additional fee a duplicate registration certificate for such new location.

Section 3. Each applicant for registration under this Act shall accompany the application for registration with a registration fee to be paid to the State Board of Health for the biennium for which registration is sought. If said application be filed and said fee paid prior to January 1st at the beginning of the biennium for which registration is sought the amount of such fee shall be One Dollar (\$1.00). If said application be filed and said fee paid after January 1st at the beginning of the biennium in which registration is sought, the amount of such fee shall be the sum of One Dollar (\$1.00), plus an additional Fifty Cents (50c) for each month or part thereof from January 1st of such year to the date when such application is filed and fee paid, provided, however, that whenever in the opinion of the State Board of Health the applicant's failure to register was caused by extenuating circumstances including illness of the applicant, the additional fee of Fifty Cents (50c) may be waived by the State Board of Health and provided further, however, that whenever any license is granted to any person to practice medicine or surgery, or both, under the provisions of Article 1, Chapter 59, Revised Statutes of Missouri for the year 1939, the State Board of Health shall upon application therefor, issue to such licensee a certificate of registration covering a period from the date of the issuance of such license and the biennium next following the date of issuance of such license without the payment of any fee.

Section 4. Any person licensed to practice medicine or surgery, or both, in this State who has retired or may hereafter retire from such practice shall not be required to register as required by this Act provided such person shall file with the State Board of Health an affidavit, on a form to be furnished by said Board, which affidavit shall state the date on which said person retired from such practice and such other facts as shall tend to verify such retirement as the State Board of Health shall deem necessary provided, however, that if such person thereafter re-engages in the practice of medicine or surgery, or both, such person shall register with the State Board of Health as provided by this Act.

Section 5. All monies received as annual registration

fees shall by the State Board of Health be paid into the State Treasury to be placed in a special fund for the purpose of carrying into effect the provisions of this Act, and disbursements shall be made from this fund in the same manner as is provided by Section 9989, Revised Statutes of Missouri for the year 1939.

Section 6. Any person who shall practice medicine or surgery in this State without having registered as provided in this Act shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not more than Five Hundred Dollars (\$500) or imprisonment in the county jail for a period of not more than six months, or by both such fine and imprisonment, and each day when such person shall so practice without having so registered and received such certificate of registration shall constitute a separate offense.

Section 7. Nothing contained in this Act shall apply to any person who is not licensed to practice medicine or surgery, or both, under the provisions of Article 1, Chapter 59, of the Revised Statutes of Missouri, 1939.

House Bill No. 194 also has been signed by the Governor and will become effective October 10. The bill reads:

### An Act

To amend Section 9983, Article 1, Chapter 59, of the Revised Statutes of Missouri, 1939, relating to the examination and qualifications of applicants to practice medicine or surgery in this state by omitting the period after the word "equivalent" in line 15 of said section and by inserting at the end of said line the following: "and satisfactory evidence of completion of premedical education consisting of a minimum of 60 semester hours of college credit in acceptable subjects from a reputable college or university approved by said Board."

*Be it enacted by the General Assembly of the State of Missouri, as follows:*

Section 1. That Section 9983, Article 1, Chapter 59, of the Revised Statutes of Missouri 1939, be and the same is hereby amended by omitting the period after the word "equivalent" in line 15 of said section and by inserting at the end of said line the following: "and satisfactory evidence of completion of premedical education consisting of a minimum of 60 semester hours of college or university approved by said Board." So that said section, when amended, shall read as follows:

Section 9983. All persons desiring to practice medicine or surgery in this State, or to treat the sick or afflicted, as provided in Section 9981 of this article, shall appear before the State Board of Health, at such time and place as the board may direct and there shall be examined as to their fitness to engage in such practice. All persons appearing for examination shall make application in writing to the secretary of the said board thirty days before the meeting. They shall furnish satisfactory evidence of their preliminary qualifications, to-wit, a certificate of graduation from an accredited high school, or its equivalent, and satisfactory evidence of completion of premedical education consisting of a minimum of 60 semester hours of college credit in acceptable subjects from a reputable college or university approved by said board. They shall also furnish satisfactory evidence of having attended throughout at least four terms of thirty-two weeks of actual instruction in each term and of having received a diploma from some reputable medical college that enforces requirements of four terms of thirty-two weeks of actual instruction in each term, including two years' experience in operative and hospital work at time of graduation; provided, that the time of graduation has been since March 12, 1901, and two years' requirements if the date of the graduation is prior to March 12, 1901, and shall also furnish evidence of good moral character. The medical examination except that part which is practical, to be in writing and the questions and

answers shall be kept on file by the State Board of Health, subject to public inspection, and shall be of elementary and practical character, but sufficiently strict to test the qualifications of the candidate as a practitioner, and shall embrace the subjects of anatomy, chemistry, physiology, therapeutics, obstetrics, gynecology, surgery, practice of medicine, bacteriology, medical jurisprudence and hygiene, and such other branches as the state board may direct; provided, that each applicant for license shall have two hours if necessary during which to answer the usual number of questions asked on each branch examined upon. The candidate shall be required to attain an average of seventy-five per centum of all subjects examined on, provided that he must not fall below fifty per centum on any one subject, before being granted a license; provided, however, that the examination of any applicant in therapeutics shall be conducted by the member or members of the said board who represent the system of medicine of which said applicant has been a student. If there shall be no representative of the school or system of which the applicant has been a student, the examination in therapeutics shall be conducted by an examiner appointed for that purpose by the governor of Missouri, but all examinations other than that in therapeutics shall be conducted as heretofore provided in this article. The Board of Health shall issue to such persons as they shall find upon examination to possess the requisite qualifications, a license to practice medicine and surgery in accordance with the provisions of this article, and the State Board of Health shall not be permitted to favor any particular school or system of medicine but all applicants shall be subjected to the same examination and the same degree of proficiency shall be required of all; provided, that in determining the qualifications necessary for registration as a qualified physician the State Board of Health may, at its discretion, accept the certificate of the National Board of Medical Examiners of the United States, chartered under the laws of the District of Columbia, in lieu of and as equivalent to its own professional examination. Every applicant for a license upon the basis of such certificate shall, upon making application showing necessary qualifications, as above set out, be required to pay the same fee required of applicants to take the examination before the board. And it is further provided that the said Board of Health may under the regulations established by the board admit without examination legally qualified practitioners of medicine who hold certificates to practice medicine in any state or territory of the United States or the District of Columbia with equal educational requirements to the State of Missouri and that extend like privileges to legally qualified practitioners from this state upon the applicant paying a fee of fifty dollars (\$50.00).

House Bill No. 193 was not signed by the Governor. This bill prohibited the use by any person licensed to practice medicine, surgery, dentistry, optometry, osteopathy, chiropractic, chiropody or veterinary surgery, or any two or more of such professions, and any person permitted to practice the curing, healing or remedying of ailments, defects or diseases of body or mind, from using the prefix "Doctor" or "Dr." in connection with his name in any letter, business card, advertisement, prescription blank, sign or public listing or display without affixing thereto suitable words or letters designating the degree held and representing the profession he is authorized to practice, making violation of the Act a misdemeanor and fixing the punishment therefor, and providing that the Act shall not apply to the use of said designation by doctors of letters, doctors of science, doctors of law, doctors of divinity, or doctors of philosophy not practicing the curing, healing or remedying of bodily or mental ailments, defects or diseases.

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

- Chariton County Medical Society, December 2, 1940.
- Montgomery County Medical Society, December 2, 1940.
- Perry County Medical Society, December 14, 1940.
- Ste. Genevieve County Medical Society, December 17, 1940.
- Howard County Medical Society, January 2, 1941.
- Camden County Medical Society, January 7, 1941.
- Andrew County Medical Society, January 9, 1941.
- Benton County Medical Society, January 28, 1941.
- Clinton County Medical Society, February 6, 1941.
- Holt County Medical Society, February 8, 1941.
- Macon County Medical Society, February 15, 1941.
- Moniteau County Medical Society, February 15, 1941.
- Mercer County Medical Society, March 12, 1941.
- Dallas-Hickory-Polk County Medical Society, April 4, 1941.
- Miller County Medical Society, April 4, 1941.
- Morgan County Medical Society, April 5, 1941.
- Johnson County Medical Society, April 11, 1941.
- Webster County Medical Society, April 22, 1941.
- DeKalb County Medical Society, April 25, 1941.
- Carter-Shannon County Medical Society, May 1, 1941.
- Pulaski County Medical Society, May 24, 1941.
- Christian County Medical Society, June 12, 1941.
- St. Francois-Iron-Madison-Washington-Reynolds County Medical Society, July 9, 1941.

# THE JOURNAL

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### THE SIGNIFICANCE OF HYPERTENSION AND RENAL DISEASE

CLYDE L. DEMING, M.D.

NEW HAVEN, CONN.

The time is opportune to survey hypertension and renal disease for crystallized ideas which can be applied clinically. Patients suffering from hypertension and renal disease are numerous in all hospitals and form a certain per cent of the patients of all the medical specialties. The virgin field for these conditions is the office of the general practitioner. It is he who first sees them. Hypertension alone signifies a dangerous future. Renal disease has long been known to cause premature death. Sir Richard Bright united these two factors. For one hundred years, Bright's disease has remained practically impregnable to science. A person who had high blood pressure presupposed that he had kidney trouble. Conversely, a person who had kidney trouble was sure to have hypertension. These two conditions seemed to remain inseparable. They connote a complex subject matter which, in their complexities, have radiated resistance to the approach of their understanding. Recent scientific investigations have barraged this subject matter in such a manner that some of the complexities are beginning to disappear. It is my ambition to bring within the scope of practicability some of the factors related to the clinical aspects of the subject.

First, one must recognize that hypertension can be produced by arterial disease, by a neurogenic or diencephalic syndrome or by endocrine or renal disease. The complexities of the neurogenic and endocrine factors will not be considered in this discussion. Because of recent investigations concerning the circulation of the kidney and the pathologic changes found in the kidney in such investigations, clinicians should now begin to think not in general terms but in terms of the circulation of each kidney individually. Goldblatt's work and numerous

recent reports of nephrectomy followed by cessation of hypertension warrant a revision of conceptions concerning the relationship of hypertension and renal disease. Hypertension can exist without renal disease and renal disease can be present without hypertension. However, it is the relationship of the two which is of particular significance at this time.

In the early part of the 20th century, pathologists tried to dissociate hypertension and renal disease. They reported autopsy findings of hypertension without demonstrable renal pathology. Conversely, cases were reported with extensive renal pathology not associated with hypertension. However, the practitioner can not escape the clinical experience of scarlet fever followed by renal disease and hypertension. The same is true of septic sore throat and long standing pyogenic infection. Toxemias of pregnancy, as a rule, are accompanied by hypertension, renal disease and premature death. Longcope recognized that after many years of kidney infection an associated hypertension developed.

The close relationship between hypertension and renal disease has been well demonstrated experimentally. The production of a definite injury to the renal tissue is followed by hypertension. The results of the use of drugs such as bichloride, subjecting the kidneys to roentgen ray or irradiation, traumatic injuries to one or both kidneys and injection of bacterial toxins are further proof that renal injury may be followed by hypertension. Such renal injuries have been shown by clinical tests to be followed by albuminuria, casts and red blood cells in the urine and diminished renal function. The histologic study of the kidneys has demonstrated destruction of some of the glomeruli and tubules and the development of interstitial fibrosis.

Not until Goldblatt's work was attention focused on the arterial circulation of the kidney with respect to renal damage expressed in terms of renal ischemia. To Goldblatt is owed the present revival of interest in the relationship of hypertension and renal disease. By applying a clamp to the renal

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artery, he diminished the normal blood flow to a kidney and was able to produce renal damage and hypertension. Page and many others have corroborated this experiment, and clinicians now have sufficient evidence that interference with the arterial circulation of a kidney produces diseased kidneys and hypertension in some patients. Subsequently, urological surgeons reported patients with obstructions to the renal artery by atheromatous plaques or other arterial disease in whom a hypertension was relieved by nephrectomy. Thus one has a definite clinical picture of cause and effect.

The question naturally arises: Is there diminished arteriorenal circulation in all cases of renal damage? Where there is renal damage, is there hypertension? If not, under what conditions may one find it clinically? Braasch, in his exhaustive study of surgical cases, found that hypertension did not occur more frequently in renal surgical cases than in general surgical cases; and, furthermore, that hypertension did not occur as a rule in patients with renal tuberculosis, hypoplastic kidney, early stone in the kidney, unilateral hydronephrosis, tumor of the kidney and minor injuries of the kidney.

However, there is a definite group of proven cases in which the kidney is responsible for the hypertension. Specific cases having occlusion, or partial occlusion, to a renal artery are reported. The obstructing factor may be either an atheromatous plaque within the arterial wall, concentric narrowing of the renal artery or compression by some tumor mass. Traumatic kidneys sometimes are followed by destruction of the organ with an associated abnormal high blood pressure reading. Urinary obstruction, either prostatic or ureteral, frequently is accompanied by hypertension. Many prostatic cases are relieved of hypertension by removal of the residual urine. There are numerous reports of unilateral pyelonephritis patients who have had a return to normal blood pressure readings after a nephrectomy.

Clinically, one can make a diagnosis of pyelonephritis and hypertension but can not determine whether or not there is a diminished blood flow through a kidney. One may assume this factor when there is a marked diminution in renal function, although there is no oncometer to make accurate readings. This is where the Goldblatt experiment fails in clinical application for diagnostic purposes. The clinician can not make this observation today. He is unable to obtain accurate clinical information concerning the amount of blood which flows through the renal artery, aberrant arteries or collateral circulation of the kidney.

So far as it is understood, the combined mechanism of hypertension and renal disease is a diminished arteriorenal blood flow followed by renal ischemia. There then is produced a substance called renin which, when acted upon by an enzyme, produces a pressor substance called angiotonin, a

much more powerful pressor substance than adrenalin. It is difficult to determine clinically diminished renal circulation and the amount of renin produced in such a kidney. At present, Goldblatt's triad of factors is not practicable but indeed valuable in the development of the subject.

From a clinical standpoint, the next contribution of significance is the work of Winternitz. He not only confirmed Goldblatt's experiments but studied more extensively the condition produced by arterial obstruction to the kidney in dogs. When both renal arteries were ligated, extensive minute hemorrhages occurred in the walls of the vessels of the lungs, arch of the aorta and muscular coats of the intestines with thrombotic lesions in the smaller vessels and infarcts of the kidneys. When one renal artery was ligated, such lesions were found in the good kidney. He concluded that renin was the agent responsible for this pathologic development. A contribution of greater significance is his work on experimental obstruction to the ureters. He found that the ligation of both ureters produced the same clinical picture as ligation of both renal arteries. The blood nitrogen and blood pressure were elevated similarly. Death occurred in about the same time, from five to seven days. The same histopathologic picture of hemorrhagic infarcts and thrombi in the kidneys, pulmonary vessels, myocardium and walls of the viscera was seen. In these kidneys, there was some evidence of repair in the formation of fibroblasts and new capillaries. Even when one ureter was obstructed, the contralateral kidney and the myocardium showed changes. Like the ligation of one renal artery, the ligation of one ureter failed to produce any elevation of the non-protein nitrogen and blood pressure. When the factor of infection was added to obstruction of the ureter, the histopathologic picture was accentuated. Thus one has a reproduction of the common clinical experience of ureteral obstruction with and without an infection, showing the early minute pathologic conditions which undoubtedly prevail in patients and which can be diagnosed.

When partial or slow ureteral obstruction was produced, lesions in the kidneys developed more slowly and there was an attempt to repair the damage by partial regeneration of the epithelium of the convoluted and collecting tubules. Now it is apparent that the same renal pathologic condition is produced by renal arterial obstruction and ureteral obstruction. Renal ischemia and hypertension likewise are produced. One can diagnose accurately ureteral obstructions and determine the amount of renal damage produced. I am unaware of any method of diagnosing an arteriorenal obstruction clinically. The arteriograms produced by Santos are not at present an accepted diagnostic procedure in these cases but might give some idea concerning the circulation of the kidney. Surgical exploration is possible but is attended by much hesitation. Renal function can be determined, whether it is adversely influenced by arterial or

ureteral obstruction. If gross obstruction is found in the urinary tract, one may assume that it plays some part in the attending hypertension. However, Page states that in the earlier phases of essential hypertension the usual tests of renal function may show no abnormality. Urea clearance and concentration tests may remain normal, but other methods of examination such as the rate of blood flow through the kidneys, calculated from plasma clearance of diodrast, and the inulin clearance determination may disclose renal abnormality. These tests need further simplification for extensive clinical use. However, they indicate a step forward in the solution of the problem and may indicate an early relationship between renal disease and hypertension even before hypertension develops.

For the last few years, numerous reports have been forthcoming describing complete cessation of hypertension after nephrectomy. Some reports show no change in the hypertension after nephrectomy, while others show temporarily lowered blood pressure with a resumption of hypertension to the preoperative readings in a few weeks or months. One might attempt to answer the following questions which will disclose some practical clinical knowledge by which he may guide his surgical judgment in patients who have a related renal disease and hypertension.

1. Why does blood pressure drop after nephrectomy in some cases and not in others?
2. Why do some patients live relatively long with hypertension?
3. Why do some patients die quickly after the onset of hypertension?
4. Why do some prostatic patients have a low blood pressure in the presence of an abnormal elevation of nonprotein nitrogen?
5. What cases should be treated with a nephrectomy?

In answer to the first question, one must assume that the cause for hypertension in that particular patient has been removed by extirpation of the kidney. The kidney may have been one with much or little gross damage, with or without an infection. Either the artery was obstructed or the ureter was obstructed. The ischemia of the kidney produced by either cause was the underlying responsible renal pathologic condition exciting the production of the renal hormone. The pressor substance or its productivity has ceased by removal of the kidney. Clinically speaking, this is only one half of the story. The remaining kidney must be considered as playing an important role in the patient who shows a favorable response to a nephrectomy. The good kidney must be a kidney which has been resistant to the agent which produced the lesion in its mate. It must be more than that; it must be a kidney which is capable of taking the responsibility of function from the affected kidney as well as carrying on its own secretory function. In other words, it must be a kidney that will accept readily

full and complete renal function for that human organism.

Some individuals with hypertension and renal disease live much longer than others. A few young individuals apparently recover enough so that their hypertension disappears and their renal function returns to a good reading. These are cases in which there is a slow ischemic development in the kidney. They probably represent cases with urinary obstructive phenomena rather than the Goldblatt experiment kidney, in which the arterial factor is *per se* not involved. The drainage of the urinary tracts remains good and pressor substance is produced at a slow rate. There has been going on and still is some factor of reparation in the kidneys; damaged tubular epithelium has been replaced to some degree by regenerated epithelium capable of function.

The patient who develops bilateral renal lesions with marked circulatory failure in the kidneys, either by a primary renal artery lesion of occlusion by one form or another or by urinary obstruction, lives but a relatively short time. The pressor substance produced is great and the blood pressure remains high and nonresponsive to all treatments. Rest in bed may reduce edema but there is little change of significance in the blood pressure readings and the renal functional tests. If hypertension exists for two years there is little that can be done to prolong the life of the patient. Systolic blood pressure remains high; diastolic is usually above 110 and may run much higher. Arterial accidents occur. The patient usually shows resistance to removal of water from the tissues and finally dies rather suddenly after a few days of oliguria.

One of the paradoxes which one sees in this study is represented in the prostatic patients. A man may have had a large amount of residual urine in the bladder for a long time and his blood pressure readings may be systolic 124 and diastolic 78 mg. respectively. These patients maintain a fair degree of health and tolerate a major surgical procedure well. They have a low renal functional test and a high nonprotein nitrogen. After the obstructive lesion has been overcome, their nonprotein nitrogen returns to a high normal level but their renal function remains low. They have the ability to maintain a nitrogen equilibrium for life existence. These patients either have acquired an immunity to the pressor substances over a long period of time or they have reparative processes going on in their kidneys which oppose or are sufficient in amount to offset the progressive renal damage.

Now what cases may one expect to benefit by a nephrectomy? First, one must demonstrate that the hypertensive case is one that has a renal ischemia; that, so far as one is able to demonstrate, the damage is in one kidney; that there is not only a good, functional kidney on the other side but one which is capable of maintaining a normal renal balance. If the good kidney has been damaged, it

must possess factors for a reparative process. For instance, a patient with a renal stone who has an associated staphylococcus infection and whose good kidney is uninfected and has ability to hyperfunction may expect a good result by a nephrectomy. If the opposite kidney can not produce an equilibrium of function, the patient probably will live longer with both kidneys although one is not very good. Cases are reported in which there was not any change in blood pressure after a nephrectomy. The remaining kidney in such cases was not capable of maintaining a renal balance. Some cases are reported in which the blood pressure fell but gradually crept up again. In such cases, also, had the better kidney been studied for its ability to maintain a nitrogen balance and been shown incapable of compensatory function, one would have evidence that renal ischemia was in a progressive phase of development.

I have a case in which a left nephrectomy was performed on a young man because the function of the kidney was low. The other kidney had had a stone which had passed and an associated moderate infection with *B. coli* with about one half function. Left nephrectomy was done, hoping that the function of the right kidney would improve. This man has run a steady down hill course during the last four years. The kidney should have been conserved. This is a sad confession, but it represents a case well studied and with complete follow-up to date. The old maxim that it takes more valor to refrain from doing surgery than to do it holds good here. It is probably not advisable to do a nephrectomy in a patient in whom a general arteriosclerosis can be demonstrated. One can not expect the better kidney to have anything but the same general arterial condition. Local arterial interference may be considered to be caused by a retroperitoneal malignancy, either primary or secondary. Aneurysm of the renal artery lies within the realm of diagnostic possibility. Localized thickening of the walls of the renal artery is diagnosed only at the operating and autopsy tables. The single Goldblatt kidney can not be diagnosed clinically until there are developed more methods of determining the blood flow through the renal artery. Winternitz's contribution demonstrates that ureteral obstruction may produce a kidney comparable to the Goldblatt kidney in every respect. It enables the clinician to give consideration to all obstructive uropathies and fortifies him with one means whereby he may reasonably show that when other factors for the production of hypertension are eliminated there is a definite relationship between renal lesions and hypertension.

#### SUMMARY

1. Renal arterial occlusion, renal trauma, pyelonephritis and urinary obstruction are factors of clinical significance in relation to hypertension.

2. The arterial circulation of each kidney must be considered individually.

3. Obstruction to arteriorenal circulation and obstruction to the ureter are of equal pathologic significance in the development of hypertension.

4. Patients with a proven unilateral renal lesion with hypertension may expect relief of hypertension by a nephrectomy when the good kidney has a compensatory function.

789 Howard Avenue.

## PREMATURE SEPARATION OF THE PLACENTA

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AND

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So many excellent papers have appeared discussing the pathogenesis, etiologic factors, classification and clinical manifestations of premature separation of the placenta that no general consideration of these phases will be attempted. Some of them will be touched upon merely to clarify the analysis of actual experience in the management of material under observation for the last eight and a half years.

This material consists of 236 cases occurring in 42,807 live births, an incidence of 1:181 or 0.55 per cent. Actually, 409 cases appeared in our files bearing a diagnosis of premature separation, but some of these were eliminated on more careful scrutiny.

Premature separation of the placenta may of course occur any time after the actual formation of the placenta. De Lee says that the condition is "in reality an abortion at or near term." Conversely it is obvious that many abortions might be called miniature premature separations. And indeed one occasionally sees abortions which in their pathologic and clinical characteristics closely simulate the picture shown by the catastrophic type of premature separation.

But since the indications for management are not identical in early and late pregnancy, and since certain standards of definition are necessary for comparative discussion, it was thought best to concur with Irving and others in limiting our cases to those occurring not earlier than the twenty-eighth week.

The matter of actual clinical classification of these later cases is a matter of some difficulty. Several bases have been used for this purpose. Irving, Falls and others have stressed the importance of distinguishing between cases which show external bleeding and those in which the hemorrhage is concealed. We recognize the undoubted correspondence between severity of clinical symptoms and pathologic damage to the uterus, and concealed hemorrhage; but we cannot accept the distinction

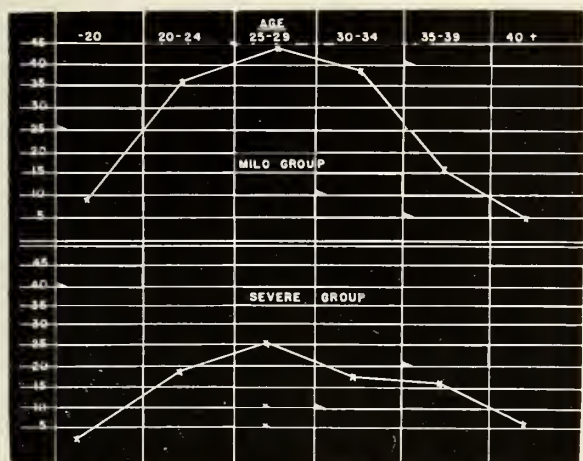


Fig. 1. Age incidence of premature separation of the placenta.

between the two types of bleeding as an adequate basis of classification, for it is obvious that in many cases, in which clinical manifestations are minimal and the very diagnosis depends on observation of intra-uterine clot and the condition of the placenta after delivery, bleeding is concealed entirely. On the other hand, nearly all of our most tragic cases have shown more or less severe external bleeding.

Inasmuch as the most significant clinical manifestations, and the most important indications for management, depend on the constitutional effects of hemorrhage, it was felt best to divide cases into mild and severe groups according to the estimation of actual blood loss and the more or less parallel severity of shock. This closely resembles Polak's division of cases into tragic and nontragic groups.

There is an intermediate or shifting group which we consider highly important from the standpoint of management. Other observers, of course, have recognized that the symptoms of premature separation may develop gradually or suddenly, but we have not seen the peculiar significance of the slowly developing cases stressed from the standpoint of management.

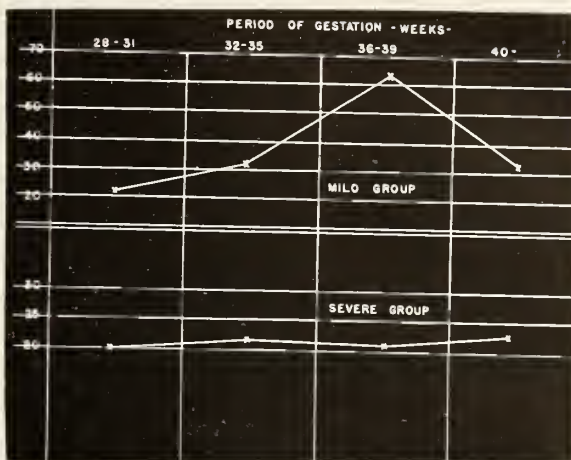


Fig. 3. Relation to the period of gestation in weeks.

In them the progress of the development of symptoms may be appreciated by careful watchfulness. In its early development hemorrhage is not great and shock does not appear. Prompt interference in this stage will prevent progress of these cases to a degree of severity which would transfer them into the severe group. Interference so employed prevents high maternal risk and salvages babies.

A few tabulations of factors, which have excited the interest of other observers, will clarify to some extent the basis of our division of cases into mild and severe groups.

Figure 1 exhibits the age incidence. It shows a fair correspondence between the curve of both the mild and severe groups, the most significant finding placing the highest incidence in both groups in the age period 25 to 29.

Figure 2 shows the influence of gravidity. In the mild group the highest incidence is in women pregnant for the first time, with a rapid and fairly constant falling off with increase in the number of pregnancies. In the severe group this difference is not so marked. Again, the highest incidence is

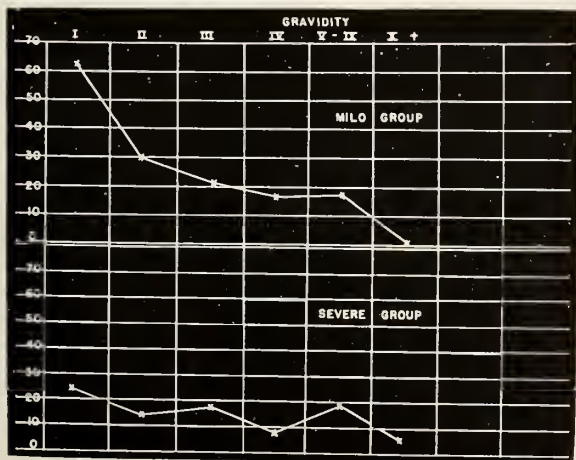


Fig. 2. Influence of gravidity in premature separation of the placenta.

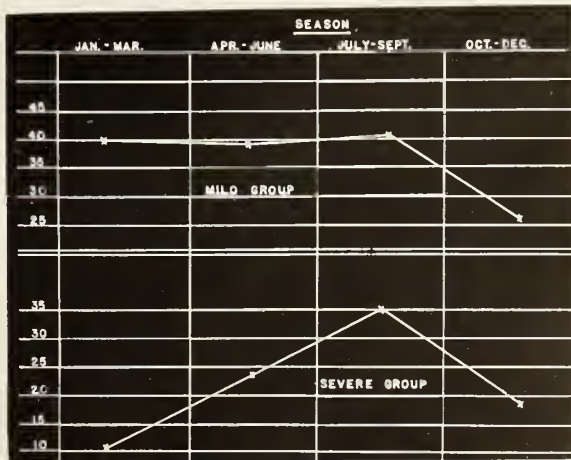


Fig. 4. Seasonal incidence of premature separation of the placenta.

in the first pregnancy, but the falling off with reference to subsequent pregnancies is somewhat irregular and not particularly significant.

Figure 3 shows the relation to the period of gestation in weeks. In the mild group by far the highest incidence is between thirty-six and thirty-nine weeks, whereas in the severe group the period of gestation appears to have little influence on the incidence.

Figure 4 shows the seasonal incidence. In the mild group it is essentially level throughout the first nine months of the year, with a sharp falling off in the last quarter. In the severe group the lowest incidence is in the first quarter. It ascends sharply to a peak in the third quarter, that is, in the summer months, and falls off during the last quarter of the year. This would appear to negate the suggestion that seasonal extragenital infections have any effect on the incidence of the condition. It, perhaps, on the other hand, would indicate that the excessive heat and humidity which characterize the summer in our locality may have something to do with the incidence of all toxemias in this season. However, there are so many other contributing factors which might enter into the picture that we do not believe great importance attaches to the seasonal variation.

Table 1 exhibits the incidence of antecedent toxemia. In the mild group, there was mild antecedent

Table 1. Incidence of Antecedent Toxemia

Group	No. of Cases	Mild Toxemia	Per Cent	Severe Toxemia	Per Cent
Mild	148	23	16.22	14	9.46
Severe	88	30	34.01	25	28.41
Total	236	53	22.45	39	16.52

Only two cases, both in mild group, were "repeat" cases.

toxemia in 16 per cent of cases and severe antecedent toxemia in 9½ per cent of the cases. Both of these sharply increase in relation to the severe group, in which 34 per cent showed mild antecedent toxemia and nearly as many, 28½ per cent, showed severe antecedent toxemia. In relation to all cases there were 22½ per cent with mild antecedent toxemia and 16½ per cent with severe antecedent toxemia. Only two cases, both in the mild group, were "repeat" cases.

Table 2 shows the relation of the type of bleeding to the cases. In the mild group 86½ per cent

Table 2. Relation of Type of Bleeding

Group	No. of Cases	External Bleeding	Per Cent	Concealed Bleeding	Per Cent
Mild	148	128	86.46	20	13.54
Severe	88	71	80.68	17	19.32

showed external bleeding and only in 13½ per cent was the bleeding entirely concealed. In the severe group 80½ per cent showed external bleeding and in 19.32 per cent the bleeding was entirely concealed. This table shows clearly, we believe, that while there is a somewhat higher incidence of entirely concealed bleeding in the severe group as

compared to the mild group, it still characterizes less than one fifth of the former. This, it seems to us, entirely invalidates any attempt to classify cases as mild or severe depending on the relative presence of external and entirely concealed bleeding.

Table 3 shows symptoms other than the cardinal one of hemorrhage upon which the diagnosis pri-

Table 3. Symptoms Other Than Hemorrhage

Group	No. of Cases	Ten-der-ness	Hyper-tonus	Shock	Ligne-ous Con-sist-ency	In Labor	Trauma Uro-log-ic
Mild	148	15	20	3	0	133	3
Severe	88	61	58	0	44	58	1

marily is based. As is to be expected, all cases in the severe group show a much higher incidence of individual symptoms and a more complete syndrome than do the cases in the mild group. In reference to some of the symptoms, the severe group exhibited individual symptoms in greater severity. Definite pain referable to the lesion itself occurred four times as frequently in the severe group, tenderness nearly three times as often, hypertonicity more than three times as often; shock was, of course, almost universal in the severe group, while it appeared only moderately in a few cases in the mild group; ligneous consistency of the uterus was not seen at all in the mild group, whereas it appeared in 33 per cent of the severe group. A large proportion of both groups were in labor when first observed. Trauma as a probable distinct etiologic factor was observed infrequently, to wit, in three cases of the mild group and in only one case of the severe group.

Table 4 shows the method of delivery. As would be expected, the methods of delivery vary widely

Table 4. Methods of Delivery

Method	Mild Group Number	Per Cent	Severe Group Number	Per Cent
Spontaneous	63	42.6	20	22.7
Low forceps	30	20.3	4	4.5
Mid forceps	8		2	
Bagging	5		7	
Version	4		1	
Breech extraction	16		1	
Artificial rupture of membranes	3		2	
Packing of cervix or uterus	1		1	
( Classical	3)		11)	
Cesarean ( Low vertical	3)	12.2	11)	56.4
section ( Low transverse	12)		28)	
( Porro	0)		0)	

between the two groups. More than 40 per cent of the mild group delivered spontaneously, while only about one half this proportion delivered spontaneously in the severe group. Low forceps extraction is the next least artificial method of delivery, so to speak, occurring almost five times as often in the mild group; on the other hand, the incidence of cesarean section was almost five times greater in the severe group. Other methods of delivery were

too small in number to exhibit characteristic variations and are not calculated on a percentage basis.

Table 5 shows the methods of anesthesia used. There is no great significance in the variety of

Table 5. *Methods of Anesthesia*

Group	Gas-Ox. Ether	Gas-Ox.	Spinal	Ether	None	C <sub>2</sub> H <sub>5</sub> CL <sub>3</sub>	Cyclopropane	Local
Mild	58	32	24	20	9	4	1	0
Severe	27	13	26	14	3	0	4	1

anesthetic agents and the particular choice in each case. The choice would depend upon the personal preference of the operator in some cases, always largely on the circumstances of the particular case being handled and in some instances upon the specific advice of the anesthetist.

In regard to management, there are two rather distinct schools of practice. All are essentially agreed that the milder group of cases, no matter what their basis of estimation, should be treated conservatively. This contemplates permitting vaginal delivery with a minimum of artificial interference. All commentators are agreed, furthermore, that radical methods for vaginal delivery, such as artificial dilatation or incision of the cervix and accouchement force, are certainly improper. Moreover, all agree that no matter how the cases are terminated, all management should be implemented by the most active measures for replacing lost volume of circulating blood by prompt and copious intravenous administration of water, salt, sugar, blood plasma and whole blood. Other proper measures of combating shock should be utilized simultaneously.

The divergence of opinion and practice pertains to the treatment of the severe group of cases. Here the conservatives almost invariably would apply the same general methods as are applied in the milder group, reserving cesarean section for a few cases in which there is necessitous mechanical indication for its exhibition.

The more radical group of practitioners believe, on the other hand, that the very existence of a tragic clinical picture depending on premature separation of the placenta will in many cases directly indicate cesarean section as the optimum method to empty the uterus promptly, control bleeding, visually estimate the condition and behavior of the uterus, apply occasionally necessary further surgical procedures and sometimes recover living babies.

Both groups of practice embrace many adherents of the most distinguished attainments. Only by constantly accruing records of large experience will the weight of evidence, it is to be hoped, resolve present discrepancies of opinion into some more universally acknowledged uniform principles. It is in such an evidential sense that our experience is presented.

Of our total of 236 cases 148 were mild and 68 were severe. In the mild group, no mothers were

lost; 18 of these 148 were sectioned because they had premature separation. Of these, several, we feel sure, under conservative management would have become severe and their babies would have been lost. A typical case is given.

Case 31054. A three gravida, aged 32, was definitely toxic to a degree constituting pre-eclampsia. Her two previous babies had been stillborn under unknown circumstances. She was admitted in the thirtieth week of her gestation, having bled sharply from the vagina before admission. She was in labor, with unremitting pains, hypertonicity of the uterus and continued slight vaginal bleeding. Her baby was still alive. There was no placenta previa. She herself was not yet in shock, but there was enough evidence to make a diagnosis of premature separation. She was sectioned immediately in the hope of getting a live baby. The baby was born alive, although it subsequently succumbed from prematurity. The uterus at operation showed extensive subperitoneal ecchymoses with considerable infiltration of the myometrium and contained 300 cc. of dark clotted blood from partial separation of the placenta. The already advanced pathologic picture revealed at operation indicated extreme probability that had she not been promptly sectioned the baby inevitably would have died in utero. Moreover, she herself would have progressed to a condition of advanced uterine damage and shock which would have constituted a severe constitutional state with increased hazard for the mother.

In all our cases there were seventeen other cases operated on in the mild stage of developing premature separation, with the delivery of living babies. This course also prevented hemorrhage to the mother, which unrestrained further development of the condition would have spelled.

Of the severe group, four mothers died. This is a mortality percentage of 1.69 in relation to all the cases; of 4.54 in relation to the severe group.

Fifty of the severe cases were sectioned and two died. This is a mortality of 4 per cent. Of thirty-eight cases of this group not sectioned, two died; this is a mortality of 5.26 per cent.

Details of these deaths follow.

Case 11496. A multipara 6, gravida 7, aged 33, was in the thirty-fifth week of gestation. Labor began with sudden sharp pain in the left lower quadrant at 1:30 a. m., January 28, 1933, with profuse vaginal bleeding. On admission to the hospital one and one half hours later there were hypertension, rigidity and tenseness of the uterus, no fetal heart, membranes intact and no placenta previa. A Voorhees bag was inserted and expelled about two hours later with considerable bleeding from the uterus. The membranes then were ruptured and a podalic version was done. The placenta was found entirely separated and came away immediately on the birth of the stillborn baby. The blood loss before and during delivery was estimated to be at least 750 cc. Shortly following delivery, the patient went into shock, the fundus being relaxed and showing little contractile power. She died in spite of transfusion and the administration of other intravenous fluids about seven hours after delivery. The autopsy showed chronic nephritis; fatty degeneration of the liver; uteroplacental apoplexy extending to the broad ligament and dissecting the pelvic peritoneum; acute dilatation of the right heart and acute anemia. The placenta showed extensive necrosis, hemorrhage and endarteritis.

Case 25060. A primigravida, aged 25, in the thirty-first week of pregnancy had had headaches and frequent nausea and vomiting throughout her pregnancy

and swelling of the ankles and face for several months. She was admitted to the hospital on her first visit to the clinic on December 31, 1935, showing marked hypertension, proteinuria and edema, with hyaline and granular casts in the urine and elevated blood metabolites. Two days later she went simultaneously into tumultuous labor and shock and delivered within less than two hours a 1,550 gram stillborn child. The placenta, still partially attached, was removed manually. She subsequently received repeated transfusions and infusions of other fluids. She died on her tenth postpartum day after running an extremely septic course. Autopsy showed a thrombophlebitis of the liver with multiple abscesses and a large subphrenic abscess, fibrinopurulent peritonitis, bilateral fibrinopurulent pleurisy, acute necrotizing enterocolitis and acute intracapsular glomerulonephritis.

Case 1812. An 11 gravida, aged 41, Negress, was in the thirty-fifth week of gestation. There had been no prenatal care. She was admitted to the hospital August 3, 1935, in labor, with hypertension, intact membranes and no vaginal bleeding but with an acutely tender, hypertonic uterus and no fetal heart. She was sectioned and the placenta was found to be completely abrupted with typical Couvelair uterus, a dead fetus, and 500 cc. of retroplacental clot within the uterus. She immediately received 1,100 cc. of whole blood by transfusion, together with 650 cc. of intravenous glucose, but was slow in recovering from shock. She was completely anuric for two days following operation. Her postpartum course was stormy, marked by signs of renal insufficiency and diffuse purulent peritonitis. Autopsy confirmed these findings, showing, besides the peritonitis, inflammatory necrotizing endometritis and metritis, diffuse subperitoneal hemorrhage, necrotic myoma of uterus and malignant nephrosclerosis.

Case 34042. A gravida 1, aged 27, was in the twenty-eighth week of gestation. She was admitted to the hospital April 1, 1938, with a diagnosis of mild pre-eclampsia and upper respiratory infection. She did not improve in spite of active treatment of the toxemia and the twentieth day following her admission she went into labor with simultaneous evidence of shock. The labor pains were unremitting, the uterus tense and tender, the fetal heart was lost. There was no vaginal bleeding. She was sectioned after a transfusion had been started. A stillborn fetus was delivered and there was 300 cc. of retroplacental blood clot present. She died thirty-six hours following operation. Shock was not ameliorated by abundant administration of fluids including 2,000 cc. of whole blood. During this time she had almost complete suppression of urine and became deeply jaundiced. Autopsy showed acute hemorrhagic hepatitis with generalized jaundice, multiple hemorrhages of the skin and mucous surfaces and marked edema of the lungs.

Table 6 exhibits the infant mortality. There is so wide a range in published figures in reference

Table 6. *Infant Mortality*

Group	No. of Cases	Babies Died	
		Number	Per Cent
Mild	151	48	31.8
Severe	88	69	78.4
Whole	238	117	49.1

to various series that almost any figures would fall within the limits of such publications. As is to be expected from the very nature of the condition under discussion, the infant mortality is necessarily high and various reported mortalities will, of course, vary with the proportion of the severe type of cases in the different series. An average

mortality of 49 per cent is not excessively high. The variation of 32 per cent and 79 per cent between the mild and severe groups, of course, would be expected. Even the high mortality of four out of five shown in the severe group is not in excess of some figures reported for entire series.

A priori, on this statistical showing, cesarean section applied to the severe group would appear to give better results than less radical measures. Opportunity occurred while this paper was in preparation for testing the validity of this conclusion by comparison.

Professor Irving of Harvard, one of the principal exponents of the conservative method of treating the severe type of cases by rupturing membranes, use of the Spanish windlass, packing of the vagina and cervix, the exhibition of pituitrin and replacement of blood by transfusion, reported the following figures on April 17 before the Academy of Medicine of Northern New Jersey, which he has graciously given his personal permission to quote:

Table 7. *Severe Cases*

Method	Cases	Deaths	Per Cent
Spanish windlass	40	3	7.5
Cesarean section	37	8	21.6
Total	77	11	14.2

In recognition of the fact that perhaps Dr. Irving has been more strict in his evaluation of "severe" cases than we, we have regrouped our "severe" cases by the elimination of all those who had living babies. On this basis, not valid in our belief but perhaps fairer for comparative purposes, we now show a group of fifty-six cases which are severe by all the following criteria: excessive blood loss, definite and severe shock, death of baby antepartum or intrapartum, necessity for transfusion.

Table 8. *Severe Cases*

Method	Cases	Deaths	Per Cent
Delivered by vagina	23	2	8.7
Cesarean section	33	2	6.0
Total	56	4	7.1

These figures agree, as did those computed on our original grouping of cases, in showing a distinct mortality gain in the judicious application of prompt abdominal section as compared to less radical procedures. In fact, while none of the figures are as good as in the first tabulation, inasmuch as the same number of deaths are applied against a smaller group, the relative advantage of cesarean section is more striking in these figures.

In actually conducting the management of premature separation of the placenta, it is well to have a certain broad scheme of procedure, but no attempt should be made to fit all cases categorically into such a scheme. It is apparent from what has been indicated already as to the great variety of degree, symptoms and obstetric conditions which several cases may exhibit that each must be most carefully individualized as to handling.

It is also important to recognize the difference which environmental conditions may impose on the practitioner. The physician who is forced to work without the aid of a hospital is necessarily restricted to the simplest means of assisting nature's delivery, i. e., rupturing the membranes, attempting to arrest bleeding by vaginal and cervical packing, morphine, pituitary preparations, inverted posture, external heat and replacement of vascular circulating fluid. Even a physician, working alone in isolated surroundings, in this day may accomplish such fluid replacement. Saline and sugar solutions, and even blood plasma, are available now commercially in easily transportable units which can be used almost as simply as taking a blood specimen for Wassermann testing.

Even where small or indifferent hospital facilities are at command, cesarean section cannot be applied to these tragic cases with impunity. Only in hospitals properly organized in their equipment, medical and nursing staffs and standards of practice may radical treatment be carried out successfully.

In such a hospital the primary and most important organization pertains to the means for promptest restoration of depleted circulating fluid. Laboratories, supply departments, physicians and nurses should be capable of rapid and cooperative mobilization and execution. Then, when a bleeding case is admitted, the patient's blood is typed immediately, if that has not already been done in the prenatal clinic, as it is in our own service; donors are sent for at once and cross-matched as soon as they report.

If the bleeding is slight, nothing more is done. If it is anything more than very slight, the medical measures already detailed are carried out and intravenous administration of saline or glucose solutions is started quickly. In either case, as soon as suitable donors are certified by the laboratory, they are required to stand by until they are used or released as circumstances warrant.

In the meantime, also, a careful history is obtained to supply such basis as possible for at least a working diagnosis, and the woman's general condition and that of her uterus and fetus are noted so far as external examination permits.

In urgent cases separate transfusion and operating teams have been mobilized in the meantime.

When, and only when, transfusion may be instantaneously started is any further examination done. When done, it is under anesthesia in the operating room, with everything and everybody ready to proceed with whatever procedure such examination may indicate is best, just as fast as it is humanly possible. No radical procedure is commenced, however, until blood is already flowing into the patient, with a reserve of further donors on hand.

Adequate defense is always costly, as all of us who are watching current Federal expenditures will appreciate. But lack of defense is even more costly, as whole nations of our friends across the sea have painfully found out.

For a hospital to be organized in every way to handle hemorrhagic emergencies, even to the free expenditure of hard cash unquestioningly when the urgency of emergency requires the purchase of blood, is of course expensive. But the wastage of human life, in peace as in war, is more expensive than any money cost for its conservation.

This is a point of view which hospital management and administration must learn to apply to the management of hemorrhagic emergencies on all services. They do not occur anywhere with greater urgency than in the type of case under discussion.

With backing imbued by this type of approach, staff physicians may be depended upon to so apply sound principles of practice as to yield the utmost salvage of precious life jeopardized by obstetric hemorrhage.

#### SUMMARY

1. An analysis is presented of 236 cases of premature separation of the placenta occurring at or after the twenty-eighth week of gestation in 42,807 live births in one clinic over a period of eight and a half years.

2. These cases are classified into mild and severe groups on the basis of the amount of hemorrhage and degree of shock exhibited in each.

3. Attention is invited to an intermediate or shifting group which if treated promptly can be kept in the mild classification but which if not so promptly treated inevitably will become severe in their manifestations.

4. Circumstances of the cases with reference to age incidence, gravidity, period of gestation, seasonal incidence, antecedent toxemia, type of bleeding, symptoms manifested, methods of delivery and methods of anesthesia are graphically shown and discussed.

5. The divergence in opinion as between conservative and radical practice is discussed and mortality figures in relation to the present series are presented to show the superiority of the radical treatment in well equipped hospitals.

6. Abstracts of the mortalities are shown as well as tabulation of the infant mortality.

7. A comparison is shown with a series recently reported designed to show the superiority of the conservative treatment.

8. The scheme of management of these cases is sketched briefly.

9. The necessity for fullest organization of hospitals for the prompt treatment of hemorrhagic emergencies, especially in obstetrics, is emphasized.

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## THE PAINFUL ARM AND SHOULDER WITH ESPECIAL REFERENCE TO THE PROBLEM OF SCALENUS NEURO- CIRCULATORY COMPRESSION

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Unilateral arm and shoulder pain is a common ailment and one which produces widespread disability. The disability varies from mild discomfort about the shoulder girdle to complete incapacity from pain with sensory and motor deficits in the affected arm. The purpose of this report is to call attention to the characteristic features of shoulder and arm pain caused by compression of the nerve and blood supply at the level of the anterior scalenus muscle. After outlining the various features of this clinical syndrome I shall indicate how it fits into the general picture of arm and shoulder pain from other known pathologic lesions about the cervical spine and shoulder joint.

Attention was first called to the importance of the anterior scalenus muscle in the cervical rib syndrome by John B. Murphy in 1905.<sup>7</sup> In this contribution he indicated clearly that symptoms from the cervical rib must in many cases be due to compression of the nerve and blood supply to the arm by the anterior scalenus muscle. Apparently, however, he did not appreciate fully the therapeutic value of his observations for he did not suggest cutting the muscle as a step in treatment. It remained for Adson and Coffey<sup>1</sup> first to propose sectioning the scalenus anticus muscle for the relief of symptoms produced by supernumerary ribs of the cervical spine. This contribution has stood the test of time and now is the accepted procedure for treatment of this disorder.

It long has been known that symptoms thought to be characteristic of cervical rib do occur in patients in whom no supernumerary rib can be demonstrated by careful roentgenologic studies. In 1935, Ochsner, Gage and DeBaKey<sup>9</sup> published a series of six cases in which the anterior scalenus

muscle was sectioned for the relief of brachial neuritis without cervical rib. They gave full credit to Naffziger as being the originator of the idea; in fact, they suggested the name "scalenus anticus syndrome (Naffziger)." Since Ochsner's contribution, reports of many series of operative cases<sup>2, 4, 6, 8, 10, 11, 12, 13</sup> have appeared in the literature. Various names for the clinical syndrome have been proposed but none express the true underlying pathologic anatomy so accurately as "scalenus neurocirculatory compression."<sup>12</sup>

*Anatomic Considerations.*—In order to understand the symptoms of compression within the scalenus angle, a clear conception of the anatomic arrangement of structures at this level is essential.

The scalenus anticus muscle passes downward and slightly lateralward beneath the clavicle and is inserted into the scalene tubercle of the first rib (fig. 1). The phrenic nerve courses over this muscle from its lateral border above to its medial border below, leaving the medial edge of the muscle near its insertion to pass into the root of the neck. The angle made by the muscle and the portion of the first rib lateral to it is an acute one due to the downward direction of the first rib. The subclavian vein emerges from the thorax to pass over the first rib medial to the insertion of the scalenus anticus muscle. The subclavian artery,

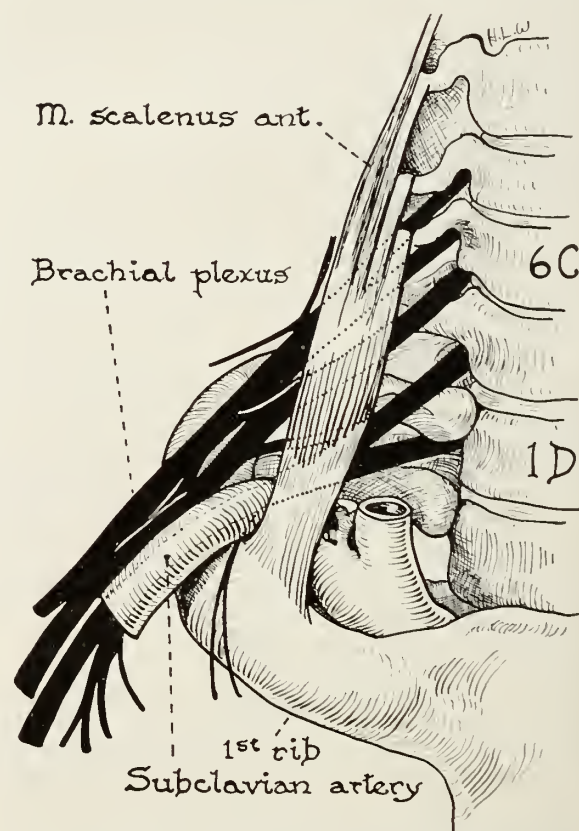


Fig. 1. Diagram illustrating the anatomic relationship between the scalenus anticus muscle, first rib, subclavian artery and brachial plexus.

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however, passes beneath the muscle to emerge in the vertex of the angle described before passing over the first rib. The brachial plexus lies in the scalenus angle immediately lateral to the subclavian artery. The first thoracic and eighth cervical nerves pass slightly downward, deepest in the angle, and over the first rib to bend rather sharply in coursing to the arm. The seventh, sixth and fifth cervical nerves have a more downward course in inverse order, do not pass as deeply into the scalenus angle and do not have to change their directions so markedly because of their already downward direction. It may be of importance that subclavian arteries vary in the height at which they take their origin and in the height to which they ascend in the neck before passing into the scalenus angle. Variations include the piercing of the scalenus anticus muscle by the subclavian artery, or a separate slip from the muscle may pass posterior to the artery. The subclavian artery may be accompanied by the subclavian vein or the normal position may be reversed.

The separation of the subclavian artery from its accompanying vein is a situation which finds no analogy elsewhere in the human body. It seems reasonable to assume that earlier in the evolutionary development the subclavian artery and vein were together but that, as the scalenus angle developed, the subclavian vein became constricted and collateral veins developed superficial to the muscle; the subclavian vein now represents these collaterals.

**Incidence.**—Primary scalenus neurocirculatory compression is a relatively common clinical entity. In a period of five years I have operated on 100 cases of this disorder and the accuracy of the diagnosis has been confirmed by the response to surgical treatment. In this same period of time there have been approximately three times as many patients who have had mild symptoms of scalenus compression and received only conservative treatment.

In the group operated upon there were fifty-six females and forty-four males. The youngest patient was 11 years and the oldest 84 years of age, the average age being 39 years. The right side alone was involved in fifty-nine cases and the left side alone in thirty-four cases. In seven instances the lesion was bilateral. In thirty-nine cases there was a definite history of trauma immediately preceding the onset of symptoms.

**Symptoms and Signs.**—As would be expected, the symptoms of scalenus neurocirculatory compression are those of cervical rib and show the same variability. However, circulatory changes are, as a rule, more profound with true cervical rib than with simple scalenus compression. The symptoms referable to direct involvement of the brachial plexus are of most diagnostic importance. Usually the medial cord of the plexus is involved alone or most severely. Thus, the pain, paresthesias and the various degrees of sensory impairment affect

primarily the ulnar distribution, i. e., the dermatomes of the eighth cervical and first dorsal nerves. In cases with concomitant sensory involvement in the median and radial distributions, the most severe loss will be found in the ulnar dermatomes. Correspondingly, the small muscles of the hand, the flexors of the fourth and fifth digits, the flexors of the remaining digits and the flexors of the arm usually are involved in approximately this order before the extensors become affected.

Pain is always present. As a matter of fact, a patient without pain probably does not have an uncomplicated scalenus neurocirculatory compression. The pain is primarily in the arm, i. e., between the shoulder joint and the elbow, but it may be directly in the shoulder, the supraclavicular fossa, at the root of the neck or over the scapular region. Except in rare instances, the pain does not radiate below the elbow. The pain is not characteristically intensified by moving the shoulder joint or by turning the neck. In fact, many patients find for themselves that they can get relief by elevating the shoulder. The pain varies in intensity from mild discomfort to complete incapacity. Many patients are unable to sleep because of the pain.

Numbness or hypesthesia characteristically occurs below the elbow and follows closely the sensory distribution of the ulnar nerve. Subjectively, this sensory loss may be of mild degree and not obtainable in the history. In other patients, numbness may be the chief complaint. In examining for sensory loss it is desirable to use several forms of stimuli. Well defined hypesthesia may be demonstrated with test tubes of hot and cold water, whereas the pin prick test may have been equivocal. Stroking the skin in the ulnar distribution may produce tingling or electric shocks. These paresthesias are most important in diagnosis, even more important than is definite sensory loss. Not infrequently the patient states that only at times does the arm become numb, and then only when hanging downward.

Muscular weakness of some degree is usually present although it may be difficult to demonstrate. The weakness usually is noted by the patient in that the grip seems to be weak and he cannot extend his fingers, particularly the ring and little fingers. In the advanced case, the patient himself may have noted atrophy of the small muscles of the hand. In testing for motor weakness one should test the grip, ability to separate the fingers against pressure and inability to extend the fingers against resistance. Also, one should observe carefully the intrinsic muscles of the hand and compare them with the opposite side. Atrophy often is accompanied by fibrillation of these muscles and, when present, is an exceedingly important sign.

The pulse in the severe case may be barely perceptible at the wrist. In other cases it may be diminished in volume and in approximately 25 per cent of all of our patients there has been a marked

difference in the blood pressure readings on the two sides. The involved hand and arm may be colder to touch than the opposite side. The skin of the hand may be moist and clammy. Definite color variations have been demonstrated in a number of patients. Pallor may be superseded by purplish discoloration much like that seen in Raynaud's disease.

Scalenus tenderness is a constant finding and without definite unilateral scalenus tenderness on the involved side the diagnosis is unwarranted. In testing for tenderness, pressure is made over the anterior scalenus muscle just above the clavicle. The two sides should be compared simultaneously in order to differentiate between normal and abnormal degrees of tenderness. In addition to local pain this maneuver should reproduce exactly the pattern of the pain, numbness and paresthesias. In other words, the reproduction of the entire pattern by mild scalenus pressure is one of the most important of all diagnostic signs. Mild scalenus pressure obliterates the pulse. However, one should not attach too much importance to this finding because it occurs in many normal individuals.

The postural test for scalenus compression is performed by the patient turning the head toward the uninvolved side, pointing the chin to the tip of the shoulder, taking a deep breath, holding it and observing the volume of the radial pulse with the arm abducted (fig. 2). When the scalenus muscle is tight, reduction in the volume or obliteration of the pulse at the wrist often is demonstrated. Also, reproduction of the pattern of the pain and numbness often are accomplished by this maneuver. In previous contributions,<sup>8,9,12</sup> the postural test has been performed by pointing the chin to the involved shoulder. We have checked this observation repeatedly and are convinced that the vascular phe-

nomena are best demonstrated by turning the head to the uninvolved side.

*Pathology.*—The scalenus muscle at operation may appear to be large and tense. In some instances, a definite nonsuppurative inflammatory reaction within the muscle and surrounding tissues has been observed. Beneath the muscle there frequently appears to be tough fibrous bands which attach to the first rib. In some instances, a band may be felt passing beneath the subclavian artery attaching to the first rib. Many variables are observed in the scalenus muscle and the tendinous bands passing beneath it. These variations may represent a situation which is similar embryologically to a cervical rib.

Many specimens of the anterior scalenus muscle have been submitted to microscopic study. In about half of the cases some evidence of chronic inflammatory reaction has been found.

*Etiology.*—The cause of primary scalenus neurocirculatory compression still is understood imperfectly. Trauma, either trivial or severe, is responsible for some of the cases. Thirty-nine out of one hundred of our patients who were operated on gave a definite history of trauma immediately preceding the onset of symptoms. The site of the trauma was usually about the neck or shoulder girdle on the affected side. Many of the other patients of the series were in occupations which required constant weight lifting above the level of the shoulders, a fact that suggests the possibility of occupational responsibility in certain cases.

The fact that most of these lesions occur in the fourth and fifth decades of life possibly would indicate that sagging of the shoulder girdle, which occurs with advancing years, may be responsible for the onset of symptoms. The shoulder girdle is situated higher in youth and gradually descends as age progresses, thereby forcing the brachial plexus further into the scalenus angle. The shoulder on the dominant side (right) droops lower in adults than on the left side, thus predisposing to brachial plexus involvement on this side.

*Treatment.*—Treatment methods for this disorder fall logically into two categories: (1) conservative, (2) operative. The most useful conservative measure consists of keeping the arm up above the shoulder level with the hand behind the head. Attention was called to this posture by a patient who presented himself for examination with his hand behind his head. When asked the reason for this posture he replied that it was the only position in which he could secure comfort. It has become our custom to institute this posture in all cases of acute involvement of the scalenus muscle. The patient should be encouraged to keep his painful arm abducted with the hand behind the head as much as possible during his waking hours and, if feasible, to sleep with the arm thus elevated. Many patients have found that tying the wrist to the head of the bed is a good way to secure maintenance of the posture during sleep.

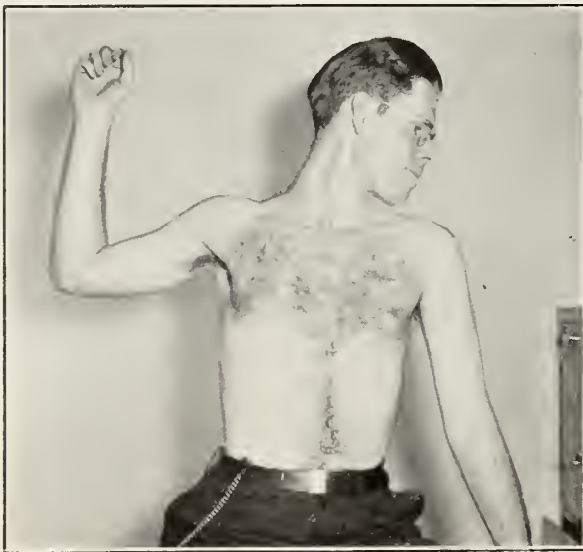


Fig. 2. Photograph illustrating the postural test as applied to a suspected scalenus neurocirculatory compression on the right side. Note particularly the position of the chin with reference to the left shoulder.

The rationale for postural treatment is that by elevating the arm and shoulder girdle the brachial plexus is displaced slightly upward out of the scalenus angle, thereby relieving the tension upon the nervous and vascular structures. The relief of pain which follows the maneuver is probably responsible for reduction in scalenus spasm, thus helping to break a vicious pressure cycle. At any rate, 75 per cent of all patients seen in the acute stage of the disorder have improved or become symptom-free with these conservative measures alone.

Heat applied locally over the scalenus muscle and shoulder also is advised. The infra-red lamp is a most satisfactory method. Diathermy may be used if conveniently at hand, although we have found it to be no more effective than externally applied dry heat.

Operation is advised only in those patients who fail to show improvement with reasonable conservative treatment. The length of time conservative measures should be applied depends upon many factors, chief of which are the acuteness and severity of symptoms, the promptness of treatment response and, particularly, the patient's willingness to indulge in a prolonged period of disability.

*Operative Technic.*—The operation should be performed under procaine infiltration anesthesia. An incision about 4 cm. long is made just above the clavicle, parallel with it and overlapping the lateral edge of the sternocleidomastoid muscle. This incision should be placed carefully to be just in front of the external jugular vein. The platysma is divided and the clavicular portion of the sternocleidomastoid muscle is retracted medially. The deep fascia is divided, care being taken to identify the transverse cervical vessels or other large vessels which may be present. The layer of fat is dissected carefully to expose the scalenus muscle. At the level of this incision, the phrenic nerve, as a rule, courses along the medial edge of the muscle which should be identified before any further steps are taken. It is not necessary to dissect the phrenic nerve free from the muscle sheath because the section of the muscle itself can be made from the lateral aspect without disturbing the bed of the phrenic nerve. The muscle is sectioned piecemeal, carefully separating it from the deeper structures. Great care is necessary to sever completely the tendinous posterior covering of the muscle and any fibrous bands which pass beneath it. Palpation within the wound frequently reveals the presence of bands which might otherwise not be seen. Usually after all the bands are severed the subclavian artery bulges into the depth of the wound. Unless there is definite evidence of scar tissue about the cords of the plexus it is not advisable to dissect them. After careful hemostasis a small rubber tissue drain is left in the dead space and the deep and superficial fasciae and the skin are closed with separate rows of interrupted silk sutures. The drain is removed after eighteen hours. The average hospital stay is four days and there have been no

operative deaths. Patients return to light work on the sixth or seventh postoperative day.

*Prognosis and Results.*—The immediate result of operation is usually excellent. Pain frequently is relieved on the operating table. In some instances, the numbness and muscular weakness disappear within a few hours. In other patients the recovery is slower and several days or weeks may be required before the maximum improvement occurs. When the healing reaction in the wound is at its height many patients have recurrence of symptoms lasting from a few days to a few weeks. This begins ordinarily from the fourth to the seventh postoperative day. One patient had a recurrence of symptoms two years and ten months following the first operation. She was operated upon again and an extensive scar was found in the depth of the wound. The scar involved the artery as well as the nerve trunks and after resection of the scar and mobilization of the cords of the brachial plexus she again obtained complete relief of symptoms and has remained well to date. This is the only patient of our series in whom symptoms have recurred sufficiently severe to justify reoperation.

#### DISCUSSION

Spasm of the anterior scalenus muscle accompanied by the inevitable neurocirculatory symptoms occurs not only as the primary disorder but as a part of the syndrome of cervical spine and shoulder joint lesions. We agree fully with Freiberg's<sup>4</sup> opinion that the scalenus syndrome is more frequently seen as a sequela of lesions about the shoulder joint and cervical spine than as an isolated clinical entity.

The following case history is recited to illustrate the difficulties which may accompany the diagnosis of scalenus compression and cervical spine lesions.

#### REPORT OF CASE

J. E. F., white male, aged 56, entered the hospital on February 7, 1938, complaining of pain in his neck, pain in his right shoulder and arm, with numbness and tingling into his hand and loss of strength in the right upper extremity of approximately four months' duration.

The neurological examination showed marked loss of sensation in the eighth cervical and first thoracic dermatomes with moderate loss of sensation in the seventh cervical dermatome. This sensory loss applied to all forms of stimuli. There was marked tenderness on pressure over the scalenus muscle with reproduction of the pattern of symptoms. There was involuntary rigidity of the neck muscles of moderate degree. Vascular changes in the right arm were pronounced. Postural test and mild scalenus pressure obliterated the radial pulse promptly.

Roentgen ray examination of the spine showed a destructive lesion involving the fourth and fifth cervical vertebrae with narrowing of the fourth cervical disk. A presumptive diagnosis of tuberculosis of the midcervical spine was made by the roentgenologist and orthopedic surgeons. Halter traction was applied and the relief of pain in his neck was immediate. The arm symptoms improved promptly. At the end of forty-eight hours of traction therapy the symptoms in the arm had subsided completely.

After five weeks of traction therapy a cervical brace was applied and the patient became ambulatory. No recurrence of arm pain was experienced and in a follow-up report three years and three months later the patient stated, "I haven't a complaint in the world and am working regularly."

The neurological manifestations in this case might have resulted from a lesion involving the seventh cervical vertebra or the first thoracic vertebra or both. However, no anatomic lesion at the level of the fourth and fifth cervical vertebrae could have produced symptoms in the seventh and eighth cervical and first thoracic nerve roots. Neither could an intraspinal lesion have produced the circulatory disturbances presented by this patient. The primary lesion, therefore, was in the midcervical spine and the symptoms involving the arm were due to reflex compression within the scalenus angle. Strangely enough, in this case the scalenus symptoms overshadowed the symptoms of the primary lesion, a situation which is most unusual.

Secondary spasm of the scalenus muscle is observed frequently in lesions about the shoulder girdle, particularly shoulder joint arthritis, subdeltoid and subacromion bursitis and rupture of the supraspinatus tendon. Therefore, before the diagnosis of primary scalenus neurocirculatory compression is justified it is essential that disease about the shoulder joint and cervical spine should have been eliminated by careful clinical and roentgenologic examination.

The treatment of uncomplicated scalenus neurocirculatory compression is scalenus tenotomy; the treatment of secondary scalenus compression is always that of the primary lesion. If the primary lesion is corrected early and adequately, one may expect in the majority of instances that the scalenus symptoms will disappear with sectioning the muscle.

#### SUMMARY

1. Scalenus neurocirculatory compression is one of the more common causes of the painful arm and shoulder. It may occur as a primary lesion with no etiologic factor in evidence other than trauma. More frequently, the characteristic symptoms occur as sequelae of disease about the shoulder girdle and cervical spine, i. e., secondary or reflex scalenus neurocirculatory compression.

2. The clinical signs and symptoms of scalenus compression are characteristic and reliable and diagnostic error need not occur if the examination is performed accurately.

3. The lesion is more frequent in females. The average age in our series was 39 years and the right side was involved about twice as often as the left side.

4. Treatment of primary scalenus compression is of two types: (1) conservative and (2) operative. Only those patients who have failed to respond to adequate conservative treatment should be subjected to operative measures. Treatment of sec-

ondary scalenus compression is that of the primary lesion.

5. If patients are properly selected for operation a uniformly good prognosis can be given. All patients will be improved and many of them dramatically cured.

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## CARDINAL PRINCIPLES OF SULFONAMIDE THERAPY

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The purpose of this paper is to discuss certain important principles in the use of sulfanilamide and its derivatives in clinical medicine. To employ these drugs intelligently it is necessary to have an understanding of their therapeutic limitations, pharmacology, toxicity, contraindications, methods of administration and dosage.

#### THERAPEUTIC LIMITATIONS

In order to know the kind of cases in which these drugs are likely to succeed, one should have some knowledge of their mode of action. At this time there are several theoretical conceptions as to the mode of action of these drugs but no one theory has been evolved which adequately explains their action. However, certain principles of treatment may be followed as a result of clinical observations of their use in several types of infections. It appears that the sulfonamides exert their greatest effectiveness in diffuse lesions characterized by maximal tissue invasion and minimal tissue destruction. The presence of necrotic tissue or pus in a lesion prevents the compounds from acting upon the organisms with the same maximum effect

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which characterizes their action on diffuse, non-suppurative infections. Furthermore, if an infection is treated after two or three days of progression, and some degree of localization or pus formation has occurred, the sulfonamides seem clinically to accomplish little more than to protect uninvolved tissue. Therefore it is important to start chemotherapy early in the disease process before pus formation takes place since once this has occurred these drugs are relatively ineffective and surgical intervention is indicated. Theoretically, a correct etiologic diagnosis should be made before starting sulfonamide treatment but for practical purposes one selects and commences chemotherapy on the basis of clinical findings and confirms the diagnosis later with bacteriologic studies.

#### PHARMACOLOGY

Some appreciation of the behavior of these drugs in man is more than a matter of academic interest as it is important that one have an understanding of the factors concerning their absorption by, distribution in and excretion from the body. With the exception of sulfanilamide, these compounds are quite insoluble in water although they attain greater degrees of solubility in body fluids. For practical purposes one may assume that sulfanilamide, sulfapyridine, sulfathiazole and sulfadiazine are nearly completely absorbed from the intestinal tract into the blood stream within from two to four hours after oral ingestion of moderate doses. After the fourth hour the amount of drug in the blood, with the exception of sulfadiazine, diminishes rapidly and in order to attain and maintain adequate blood concentration of sulfanilamide, sulfapyridine and sulfathiazole it is important to administer a large initial dose followed by smaller amounts of the drugs at four hour intervals day and night until complete clinical cures are obtained. Since irregular or varying concentrations of these drugs in the blood result in diminished therapeutic results, it is necessary to follow this schedule of dosage if even blood levels of the drugs are to be maintained. Because of the behavior of sulfadiazine it is possible to administer this drug at six hour intervals instead of the four hour schedule.

After absorption into the blood stream, the sulfonamide drugs are partially conjugated by the liver into the acetyl or inactive fraction. In general, approximately 20 per cent of sulfanilamide, 30 per cent of sulfathiazole and 15 per cent of sulfadiazine appear in the circulating blood as acetyl compound. Because of the irregular conjugation of sulfapyridine, 10 to 90 per cent, it is impossible to predict the amount of acetylsulfapyridine present although the average is about 35 per cent of the total drug present.

For the most part, these compounds resemble urea in their equal distribution in the body and they diffuse readily into body tissues and fluids. This, however, varies in relation to vascular supply so that diffusion in areas of chronic infection,

bone and necrotic tissue may be deficient. All of these compounds are present in exudates and transudates in concentrations slightly lower than those found in the blood. With the exception of sulfathiazole, they pass readily into the cerebrospinal fluid in concentrations averaging from 50 to 65 per cent of that in the blood. Because of the low concentration, 20 per cent, attained with sulfathiazole in the cerebrospinal fluids, its use in meningeal infections has been limited. However, the low concentration of sulfathiazole in the spinal fluid is not necessarily of great consequence because it is the existence of antibacterial concentrations of drug in submeningeal tissues, curtailing bacterial invasion, which limits the spread of the process as much as the drug in the spinal fluid itself. It is, nevertheless, desirable to have bacteriostatic concentration of drug in the spinal fluid and, for this reason, sulfathiazole is not recommended for the treatment of meningitis. As in cerebrospinal fluids, these compounds, with the exception of sulfathiazole, readily penetrate the red blood cells. This is of clinical importance as far as the development of hemolytic anemia is concerned.

These drugs are excreted mostly in the urine both as free and acetylated compounds and, with the exception of sulfadiazine, within twenty-four hours. Their excretion is similar to that of urea but reabsorption by the tubules occurs to a greater extent and their elimination is reduced in the presence of diminished nitrogen excretion. However, the clearance of these drugs is increased definitely by an increased rate of flow of urine and this is obtained best by forcing fluids either by mouth or, if necessary, parenterally. With a decrease in kidney function, one finds an increase in drug concentration in the blood, especially the acetyl fractions. Therefore, should the volume of urine become low, the possibility of stone formation in the urinary tract by crystals of the acetyl compounds, particularly acetylsulfapyridine and acetylsulfathiazole, is greatly increased. Hence, it is extremely important, in order to facilitate the excretion of the acetyl drugs by the kidneys, to maintain an adequate urinary output of at least 1,200 cc. daily.

The renal complications from the use of these drugs, particularly sulfapyridine and sulfathiazole, are due in part if not entirely to the presence of crystals in the urinary tract. In view of experience with these drugs it seems advisable, in order to decrease the incidence and number of drug crystals, to administer alkali with sulfapyridine and sulfathiazole and possibly also with sulfadiazine. However, crystalluria is observed less frequently with sulfadiazine than with sulfapyridine or sulfathiazole because of its relatively low degree of acetylation plus the fact that acetylsulfadiazine is relatively more soluble in urine.

#### TOXICOLOGY

The sulfonamide drugs are toxic. They may, at times, be more dangerous than the disease for

which they are employed; but the same is true of a number of other drugs which are being used. However, because of the toxic manifestations associated with the use of the sulfonamides one finds cautious physicians denying their patients the full benefit of therapy. Therefore, it is important to have knowledge of these toxic effects. In discussing the untoward reactions of sulfonamide therapy it is well to point out several factors which tend to influence their incidence and severity. The length of time that the drugs are administered is probably the most important factor. Many of the more severe reactions, such as agranulocytosis, develop after the twelfth day of therapy. Children seem to tolerate these drugs better than the aged and those of good nutrition and normal renal function better than the poorly nourished and those having kidney damage. The colored race appears to tolerate these drugs better than the white race. Furthermore, the incidence of certain toxic effects depends on whether the patient is ambulatory or is confined to bed. In this connection, it is my feeling that if a patient is sick enough to warrant sulfonamide therapy, he should remain in bed during treatment. This has certain exceptions such as gonorrhea in the male; because of its social implications the patients are best handled as ambulatory cases.

*Mild Toxic Reactions.*—Ambulatory patients complain of dizziness rather commonly, especially with sulfanilamide or sulfapyridine therapy. The recognition that dizziness may occur is important, especially with respect to patients who operate machines requiring precision or judgment. Cyanosis often is observed in patients receiving sulfanilamide but is produced to a lesser degree with the other drugs of this group and can be disregarded. Its possible occurrence and harmlessness should be explained to both patient and family as at times it may become quite pronounced and alarming. The most frequent toxic reactions from these drugs are nausea and vomiting and they usually appear during the first twenty-four hours of therapy. The vomiting associated with sulfanilamide (30 per cent) and sulfathiazole (18 per cent) is, as a rule, mild and rarely does it become so severe as to necessitate stopping drug therapy. However, with sulfapyridine (60 per cent) vomiting constitutes a more serious problem and not infrequently it is necessary to stop treatment. Sulfadiazine has caused vomiting in only 4 per cent of my cases. A careful check on fluid and salt balance is indicated in cases of severe vomiting.

*Severe Toxic Reactions.*—Drug fever is seen in approximately 9 per cent, 3 per cent, 4 per cent and 2 per cent of patients receiving sulfanilamide, sulfapyridine, sulfathiazole and sulfadiazine, respectively. It may occur at any time but is most commonly seen from five to ten days after the beginning of treatment. Frequently drug fever is followed by dermatitis, hemolytic anemia or neutropenia and if it occurs treatment should be stopped. At times it is difficult to determine

whether the temperature rise represents a drug reaction or a recrudescence of the infection. The fever of the original infection is usually normal by the third day of treatment and if the patient is improved clinically one should suspect that the rise in temperature is due to the drug. The leukocyte count may or may not be elevated during drug fever. As a rule, if the temperature is due to the drug, it will drop within from twenty-four to forty-eight hours if the drug is stopped and fluids are forced. If drug treatment is again necessary it is well to administer 5 grains of drug by mouth and if no sharp febrile response occurs within twelve hours the drug can be started with extra precautions. Drug rashes occur with sulfanilamide (2 per cent), sulfapyridine (2 per cent), sulfathiazole (4 per cent) and sulfadiazine (1 per cent) and may occur at any time after the beginning of treatment, especially after the fifth day. If the patient's condition warrants, the drug may be continued with caution although it is best to stop treatment. Conjunctivitis is seen only in patients receiving sulfathiazole (2.5 per cent) and occurs usually after the fourth day of treatment. Psychoses due to these drugs occur at any time with sulfanilamide (2 per cent), sulfapyridine (3 per cent), sulfathiazole (4 per cent) or sulfadiazine (6 per cent). If the infectious process is under control when psychosis is observed the drug is best discontinued. Hematuria is not observed with sulfanilamide but occurs microscopically in about 10 per cent of patients treated with sulfapyridine and sulfathiazole and in 3 per cent of those treated with sulfadiazine. Gross hematuria occurs in 1 per cent and .5 per cent of sulfapyridine and sulfathiazole treated cases respectively but as yet I have not encountered it with sulfadiazine. Unless a considerable number of red blood cells are detected or evidence of ureteral blockage is apparent, cautious treatment may be continued but it should be remembered that hematuria is often a precursor of severe renal insufficiency. Renal calculi are seen in approximately 0.5 per cent and 0.3 per cent of patients receiving sulfapyridine and sulfathiazole respectively. As yet none have been observed with sulfadiazine. Occasional cases of anuria have been observed with the use of sulfapyridine or sulfathiazole. In such cases the drug should be stopped and fluids forced. Depression of the white blood cells may occur at any time with these compounds. As far as I know, there have been no reports of agranulocytosis developing within the first twelve days of treatment with any of these drugs. If the polymorphonuclear cells fall below 40 per cent it is best to stop treatment. Acute hemolytic anemia occurs in 1.5 per cent of patients receiving sulfanilamide and in 1 per cent treated with sulfapyridine. It usually appears during the first four days of treatment and the drug is best stopped. Mild anemia of the hemolytic type is seen frequently with sulfanilamide and sulfapyridine but to a lesser degree with sulfathiazole and is not considered serious.

As mentioned previously, sulfadiazine penetrates the red blood cells readily and this toxic effect should be expected to occur. If the hemoglobin falls below 60 per cent, transfusions of citrated blood are indicated. In this connection, it should be said that there is increasing evidence that the sulfonamides tend to alter the recipient's blood so that blood groupings become uncertain and the danger of transfusion reactions is increased.

Other toxic effects such as hepatitis, purpura hemorrhagica and neuritis occur rarely with sulfanilamide or sulfapyridine. It is apparent from the previous brief discussion that the side effects associated with these drugs are many but, if the patient is followed closely, the severity of these toxic manifestations may be diminished.

#### CONTRAINDICATIONS

In my experience the only possible contraindication to sulfonamide treatment is a history of a previous sensitivity to sulfanilamide and its derivatives as manifested by drug fever, gross hematuria, dermatitis, hemolytic anemia, neutropenia or jaundice. Even in spite of such a known sensitivity, it might be advisable, if the infection is severe, to administer the drug and watch closely for toxic effects. In moderately severe infections a test dose of 5 grains of the drug may be given by mouth and the patient watched for twelve hours for possible toxic effects before beginning treatment. The presence of jaundice, nephritis, anemia or leukopenia, before treatment is started, does not contraindicate drug therapy. Often these conditions disappear as the infection is brought under control by adequate sulfonamide therapy. I know of no medication or food which cannot be given to patients receiving the sulfonamides. In ambulatory cases it is best to advise against the use of alcohol as at times it tends to produce marked dizziness. Some physicians recommend an adequate vitamin intake in all patients receiving these drugs. It is my feeling that in acute infections the administration of nicotinic acid with sulfapyridine and thiamin chloride with sulfathiazole and sulfadiazine is inadvisable until adequate data are presented as to their definite value.

#### METHODS OF ADMINISTRATION

The sulfonamide compounds are for the most part administered locally, orally and parenterally. The local use of these drugs is now receiving a great deal of interest and all four compounds may be used in this manner. In general, administration of these drugs by mouth constitutes the most satisfactory method. However, in certain instances when a rapid elevation of the blood level of the drug is desired, or when oral medication is impracticable or impossible, it is necessary to resort to parenteral administration. Sulfanilamide, because of its relatively high degree of solubility in water, can be given subcutaneously or intravenously as a 1.0 per cent solution in sterile physiologic saline. Best re-

sults with sulfanilamide parenterally are obtained with the subcutaneous route. In order to administer sulfapyridine, sulfathiazole or sulfadiazine parenterally it is necessary, because of their physical properties, to employ the sodium salt of these drugs. For intravenous therapy with these compounds, a 5 per cent solution of the sodium salt in sterile distilled water is used. Some workers advocate the intramuscular administration of these three drugs (.5 to 33.3 per cent solution) but, because of their high degree of alkalinity, I reserve this route as a last resort.

**Blood Levels.**—Theoretically, all patients treated with the sulfonamides should have frequent estimation of the concentration of the drug in the blood. However, experience with these drugs, with the exception of sulfanilamide, has failed to show any correlation between therapeutic effectiveness and the blood level of free drug. Moreover, certain factors such as kidney function, drug absorption and the state of dehydration all tend to influence the amount of drug found in the blood. Furthermore, in many instances in which these drugs are used, facilities for determining their concentration in blood will be lacking. Therefore, it seems reasonable for practical purposes to resort to the approximate amount of drug which must be given in order to obtain therapeutic effectiveness.

#### DOSAGES

In discussing the dosage of these drugs, it is well to point out several factors which influence the amount of drug that is necessary to obtain the desired results. As a rule the dosages are smaller when the compounds are employed prophylactically than when they are used therapeutically. Patients treated in bed usually are given larger amounts than those that are ambulatory. The type of infecting organism must be considered as to its susceptibility to the drug and also whether the infection is mild or severe. Acute conditions, involving soft tissues, require different dosages than do chronic bone infections. These and others are important considerations in deciding the amount of drug which should be given. From this it becomes apparent that it is impossible to outline a course of sulfonamide therapy which will suit the needs of every patient. Therefore, the following recommendations on dosage are for the treatment of adult patients suffering with acute infections which are severe enough to warrant full sulfonamide dosage.

**Sulfanilamide.**—A blood concentration of free sulfanilamide of 10 mg. per cent will give maximum therapeutic effectiveness in most types of infections susceptible to the drug. Higher concentrations (15 mg. per cent) are indicated in certain instances such as meningeal infections. In general, adequate blood concentration of free drug can be accomplished by an initial dose of from 3 to 5 gm. of sulfanilamide followed by doses of 1.0 to 1.3 gm. every four hours day and night until the tempera-

ture has been normal for seventy-two hours, along with signs of clinical improvement. The dose then is reduced gradually until complete cure is obtained. This dose schedule applies to the parenteral administration by the subcutaneous route although the rate of absorption by the tissues will influence the number of injections necessary. In general, it is necessary to give the drug every six to eight hours in order to maintain adequate blood levels of free drug.

*Sulfapyridine and Sulfathiazole.*—As mentioned previously, the amount of free drug in the blood is of doubtful significance although a level of above 5 mg. per cent should give maximum results except in certain cases such as meningitis, in which higher levels (10 to 15 mg. per cent) are desirable. The usual dosage by mouth for these drugs is an initial dose of 3 to 4 gm. followed by 1 gm. every four hours day and night. For intravenous use with the sodium salt of these drugs, the dosage is calculated on the basis of .006 gm. per kilogram of body weight and repeated at six hour intervals.

*Sulfadiazine.*—Because of the behavior of sulfadiazine, the average blood level of free drug is higher than that obtained with sulfapyridine or sulfathiazole and it is possible to administer this compound in 1 gm. doses at six hour intervals instead of every four hours. The same initial dosage of 3 to 4 gm. is employed. Furthermore, the intravenous use of sodium sulfadiazine is controlled more easily and it is possible to employ the same dosage as with sulfapyridine and sulfathiazole but at twelve hour intervals.

#### DRUG FAILURES

As a rule if these drugs are effective in combating bacterial infections they will exert maximum effectiveness in a relatively short period of time. The failure of a patient suffering with an infection to respond to sulfonamide therapy within from forty-eight to seventy-two hours usually suggests several possibilities. First, a localized suppurative process such as empyema may be present, in which case surgical intervention is indicated. Second, there may be an overwhelming infection with spread, probably accompanied by blood stream involvement. Such cases should be given the benefit of serum in addition to the drug. Third, the causative agent of the infection may be an organism not susceptible to the drug, such as a virus. If, after seventy-two hours of chemotherapy, no improvement is noted the drug is best stopped. It is important that once treatment with one of these drugs is started it should be continued, unless severe toxic reactions occur, until a complete clinical cure is obtained. Not infrequently a recurrence or spread in the infection will occur if treatment is discontinued too early. A fall in temperature often proves deceptive and the importance of carefully performed physical studies to detect possible extension of the infectious process is indicated.

I believe that constantly improving results will

be obtained with the use of these drugs if the basic considerations discussed are recognized consistently. In brief, the following principles of sulfonamide therapy seem important:

1. Inquire as to previous sulfonamide sensitivity.
2. Start chemotherapy early in the disease.
3. Use large initial dose of drug.
4. Administer drug day and night by the clock.
5. Maintain daily urinary output of at least 1,200 cc.
6. Watch patient closely for possible drug toxicity.
7. Continue drug until complete cure is obtained.
8. Employ surgical drainage when necessary.

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## REGIONAL ENTERITIS

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The existence of chronic nonspecific inflammatory involvement of the small intestine has long been recognized but little attention was paid to this condition until 1932 when Crohn, Ginzburg and Oppenheimer<sup>1</sup> advanced the suggestion that these lesions constituted a distinct clinical and pathologic entity. The accuracy of this concept is attested by its universal acceptance. An ever increasing accumulation of case reports has contributed greatly to the knowledge of the symptomatology and pathology of this new disease entity. As a result of this additional knowledge, together with his own personal experience which now numbers over 200 cases, Crohn<sup>2</sup> has modified some of his original statements. He coined the term "regional ileitis" to describe the disease because at first he believed that the lesions were strictly confined to the ileum. However, since then, the finding of typical lesions in the jejunum and in the colon has led most recent authors to follow the lead of Brown, Bargen and Weber<sup>3</sup> and utilize the term "regional enteritis" as being more inclusive. "Terminal ileitis," a highly descriptive phrase, is used by many because the disease is found commonly in the terminal ileum but this and such terms as "chronic ulcerative enteritis" or "chronic cicatrizing enteritis" should be abandoned since they do not describe all locations or phases of the disease. The questions that naturally arise are: What was the disposition of these cases prior to 1932 and is the large number of cases now being reported due to better diagnostic skill engendered by greater interest in the condition or is there actually increased incidence of the disease? The answer to the first question is that many cases in the acute phase of the disease were overlooked because it was assumed that the ileal involvement was secondary to inflammation

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in the appendix and, in the chronic stage, many cases were indexed as atypical tuberculosis. The answer to the second question must be that the disease is increasing. In a recent study at the Henry Ford Hospital<sup>4</sup> it was found that out of 130,000 admissions during an eight year period between January 1, 1933, and January 1, 1941, twenty-eight cases of regional enteritis were treated while in the preceding fifteen year period only one case of granuloma of the small intestine was indexed out of 195,000 admissions. Submitting that the acute cases in the earlier period were not diagnosed and that some of the seven cases recorded as intestinal tuberculosis were actually examples of regional enteritis, it is still evident that the disease is increasing. Moreover, twelve of the twenty-eight patients at the Henry Ford Hospital required operation for relief of obstructive symptoms or approximately one patient in 10,000 admissions was operated upon for intestinal obstruction due to regional enteritis. Comparing this with the earlier group, it is found that including both granuloma and intestinal tuberculosis, only one patient in 25,000 admissions was operated upon for intestinal obstruction due to both of these conditions.

*Etiology.*—The cause of regional enteritis remains an unsolved problem. Many theories have been advanced but none has stood up under adequate investigation. The resemblance of the lesions to those of tuberculosis has led certain observers to conclude that regional enteritis was a manifestation of atypical tuberculosis. Avian and mammalian tuberculosis were suggested as etiologic factors by the late W. J. Mayo. Felsen<sup>5</sup> has suggested that the disease is due to involvement of the ileum by a dysentery bacillus. Syphilis, lymphopathia venerea and mesenteric adenitis have all been suggested as etiologic factors without sufficient evidence to prove a definite relationship. Certain points in the history of patients suffering from regional enteritis, such as exacerbations and remissions, invite comparison with ulcerative colitis but, since the causes of both conditions are unknown, conjecture is futile.

*Pathology.*—In the acute stage, the involved segment of bowel is fiery red in appearance. The adjacent mesenteric lymph nodes are enlarged enormously and there is an excess of free peritoneal fluid which at times contains exudate. Edema is the outstanding feature. The intestinal wall, the mesentery and even the lymph nodes share in the engorgement.

In the subacute stage, the color of the bowel deepens to a maroon shade. The engorgement persists but takes on a more permanent appearance. The bowel wall is thickened greatly as is the mesentery but the lymph nodes, while enlarged, are not as enormous as in the acute stage. The diseased portion of the bowel is demarcated sharply from the healthy. Multiple lesions may be present with normal intestine and mesentery intervening. Freedom from adhesions is a remarkable feature

of these conditions. On section, the mucosa may be ulcerated.

In the chronic stage of the disease, the color of the affected bowel deepens still further, to almost a plum color. The bowel wall is thickened enormously and has a leathery feel. The mesentery is thickened so greatly that it is foreshortened, thus pulling the terminal ileum to a higher level in the right lower quadrant and providing a valuable diagnostic sign. The lymph nodes are enlarged but, again, not so pronounced as in the acute or subacute stages of the disease. In spite of chronicity, the lymph nodes exhibit little tendency to break down or to become calcified. On section, the intestine shows diminished lumen on account of thickening of all the coats, more especially the submucosal. This explains why obstruction is so common in this phase of the disease. The involved section of intestine often lies in the pelvis where it may be confused with pelvic tumors. Even in the advanced stage, the freedom from adhesions is remarkable although the tendency to fistula formation either internal or external is just as characteristic. External intestinal fistulas leading from the surface to the diseased intestine may be found in any stage of the disease. It often follows ill advised appendectomy in the acute stage. Internal fistula, however, usually is found in the chronic stage. Other areas of small bowel, the colon, bladder or rectum may have a fistulous communication with the diseased ileum. It is probable, though, that the fistulas formed during the ulcerative or subacute stage form erosion of the ulcers.

*Symptomatology.*—Since each phase of the disease presents different features, it is necessary to consider each stage separately.

*Stage 1. The Acute Stage.*—Patients in the acute stage usually have nausea, vomiting and right lower quadrant pain, with the result that an emergency operation for appendicitis is performed. The peritoneal coat of the appendix frequently shares in the inflammatory reaction but the other coats of the appendicular wall are not involved. The surgeon often believes that the inflammation has spread from the appendix, thus accounting for the inflamed condition of the terminal ileum; appendectomy is proceeded with and it is not until later that the true state of affairs is revealed. Intractable fecal fistula through the appendectomy wound often gives the first clue of the regional enteritis; but not all patients develop fistula. In some, the diagnosis is not suggested until serial intestinal films are made months or years later. In others, the acute condition appears to have subsided entirely although the disease may be merely quiescent. Again, certain patients give no definite history of an acute phase of the condition but in these it is probable that the acute stage was mild or passed unnoticed, just as occurs with acute appendicitis.

*Stage 2. The Irritative Stage.*—The symptoms are due to the ulceration of the mucosa and local-

ized thickening of the intestinal wall. Frequent stools, anemia, lassitude and loss of weight are outstanding features. The stools contain much mucus but, in spite of mucosal ulceration, gross blood is rare. In one patient at the Henry Ford Hospital,<sup>6</sup> repeated massive intestinal bleeding occurred but this is an uncommon finding in regional enteritis. Fistula formation of the internal type is of frequent occurrence in this stage. The ulcerated intestine becomes adherent to an adjacent loop of small or large intestine or the urinary bladder and, with progress of the ulceration, an internal fistula is formed readily. External fistulas also appear through a previous operative scar, along the psoas muscle to the groin or through the pelvic diaphragm into the perineum. Many obscure pelvi-rectal fistulas have had their origin in loops of diseased ileum adherent to the pelvic floor. The ulcerative or irritative stage, like ulcerative colitis, which it mimics, is characterized by periods of remission followed by exacerbation. Recurrences after radical surgery usually are found in this stage of the disease. Although the symptoms of this stage in general are those of a chronic disease, acute flare-ups with leukocytosis and elevation of temperature are common.

*Stage 3. The Obstructive Stage.*—It is not always clear that either the irritative or obstructive stages are sequences of the acute stage for it may well be that the disease has been chronic since the onset. There can, however, be no question about the chronicity of the obstructive stage. The symptoms are those of chronic intestinal obstruction, crampy intestinal pains, borborygmi, mild distension, anemia, loss of weight and other evidence of low grade toxemia. The thickened intestine is often palpable in the right lower quadrant or even on rectal or vaginal examination where it may be confused with pelvic disease. Fistula formation either internal or external is common. Complete intestinal obstruction is rare.

#### DIAGNOSIS

In the acute stage, regional enteritis is confused with acute appendicitis. It is probable that when the disease is confined to the terminal ileum, surgeons will continue to make this diagnostic error because the signs and symptoms are so indicative of acute appendicitis that laparotomy will be performed when the acute process is diffuse. Generalized abdominal pain and distension suggests acute or subacute obstruction so strongly that a flat roentgen ray film of the abdomen will be taken in many instances. The finding of multiple dilated loops of small bowel with fluid levels in the absence of any definite cause of acute obstruction should lead the observer to consider the possibility of acute diffuse regional enteritis.

In the subacute stage the typical patient is a young adult male (80 per cent of our patients were under 40 years of age and males outnumbered females in the ratio of 3 to 2) complaining of

colicky abdominal pain, loss of weight and generalized weakness. On abdominal examination, an appendectomy scar is seen often covered by a dressing because of a persistent fecal fistula. The abdomen may have areas of tenderness to palpation but a mass is rare. Auscultation of the abdomen reveals hypermotility of the small intestine. Serial films of the small intestine show a filling defect in the terminal ileum and multiple areas of dilated intestine proximal to this. The ileum may be so narrowed as to fill with only a thin column of barium, the string sign of Kantor.<sup>7</sup> A tendency to acute exacerbations is characteristic of this stage of the disease and is of help in the diagnosis.

In the chronic stage, obstructive symptoms predominate and, in addition, patients exhibit manifestations of toxemia such as anemia and loss of weight. A palpable mass is usually present in the right lower quadrant or occasionally in the pelvis where it may be felt on pelvic or vaginal examination. Fistulous tracts are common. Crohn<sup>2</sup> states that it is the outstanding characteristic of this pathologic process. In the investigation of fistulous tracts having a possible intra-abdominal origin the first step should be to rule out regional enteritis.

The staff was able to diagnose only one third of the cases at the Henry Ford Hospital. The commonest reason for failure to arrive at a correct diagnosis was that regional enteritis was not considered in the differential diagnosis.

#### DIFFERENTIAL DIAGNOSIS

1. *Acute Appendicitis.*—All of the cases of acute regional enteritis (25 per cent of the series) were diagnosed at laparotomy and in all but one the pre-operative diagnosis was acute appendicitis. Since this has been the experience of others it is unlikely that these conditions will be differentiated often.

2. *Ulcerative Colitis.*—In the subacute or ulcerative state the condition may be confused with ulcerative colitis but negative sigmoidoscopy and negative barium enema films serve to exclude involvement of the colon.

3. *Right Lower Quadrant Masses.*—If the appendix has not been removed the mass may be due to an appendix abscess. Tuberculosis of the ileocecal region or anywhere in the small intestine, cecal carcinoma or actinomycosis, mesenteric lymphadenitis, Hodgkin's disease or malignancy of the small intestine give rise to masses in the right lower quadrant with symptoms of chronic intestinal obstruction; but, except for tuberculosis, none has the long duration of history of remissions as does regional enteritis. A negative tuberculosis reaction and negative chest films usually will rule out tuberculosis.

#### TREATMENT

There can be little doubt but that it is sound practice to refrain from removing the appendix when the terminal ileum is found to be inflamed on

opening the abdomen at an emergency operation for supposedly acute appendicitis. Moreover, the surgeon should not handle the inflamed intestine for it is probable that fistulas develop more from trauma to the diseased bowel wall, incidental to mobilizing the appendix, than from the appendectomy itself. At the same time, it should be noted that an easily accessible appendix may be removed without complication. In the twenty-eight cases reported appendectomy was performed in six of the seven acute cases encountered without the development of a fistula and, interestingly enough, the only case of fistula in this series followed an operation for ectopic pregnancy. If minimal trauma such as occurs with packing intestines out of the operative field can produce intestinal fistula, it well may be that this is the explanation of why fistulas follow appendectomy.

The acute cases, then, should be left alone. If the condition is discovered at laparotomy the surgeon should content himself with closing the abdomen for acute regional enteritis is productive of a pronounced toxemia and patients do not bear surgery well. In one of the patients presenting signs of acute intestinal obstruction, a short circuiting procedure was followed by early circulatory collapse and death. In the subacute stage, elective operations should be performed in a quiescent period only because, during an acute exacerbation the same situation prevails as during the acute phase of the disease. Emergency operations sometimes are required for acute intestinal obstruction or abscess formation from perforation of an ulcer into the free peritoneal cavity but, fortunately, both of these complications are rare.

In the chronic stage the choice of operation lies between primary resection or short circuiting. In the experience at the Henry Ford Hospital, primary resection and anastomosis has yielded the most satisfactory results. Seventeen consecutive resections have been done without a death. The whole ileocecal segment must be removed when the disease encroaches on the last few inches of the ileum, otherwise segmented resection with end to end or side to side anastomosis is sufficient. It is important to make a wide excision of the mesentery to protect against recurrence and the whole intestine must be examined carefully so that skip areas of involvement shall not be overlooked.

Entero-anastomosis around the diseased area may be performed either as the first part of a two stage resection or as a palliative measure when the patient's condition does not warrant resection. There are numerous case reports of patients having done well after short circuiting without subsequent resection but in general it would appear that the diseased focus should be removed.

Fistulas usually require resection of the involved area of intestine in order to obtain healing. In complicated cases a preliminary short circuiting is advisable and in the case of internal hernia, involv-

ing the colon or rectum, colostomy may be necessary as the first step.

#### PROGNOSIS

The prognosis in regional enteritis always should be guarded because the nature and life history of the disease is not yet known and because of the tendency to recurrence. In one third of the resected cases a second operation was necessary. This is double the recurrent rate quoted by Crohn<sup>2</sup> (15 per cent) but it is hoped this will be reduced by wider resection of the mesentery and by not overlooking skip areas.

Many patients subjected to laparotomy during the acute phase of the disease have recovered completely but it may be that the disease is simply quiescent. Of the seven patients in this series on whom appendectomy was performed during the acute stage, only one has progressed to the point at which resection has been necessary but the time elapsed has been too short to conclude that these patients are cured. Similarly a number of patients have been restored to health by short circuiting operations. It is apparent that prognosis is exceedingly difficult in the light of present knowledge of the disease.

#### SUMMARY AND CONCLUSIONS

1. The incidence of regional enteritis is increasing.
2. It is primarily a disease of young adult life.
3. Males are more commonly affected than females in the ratio of 4 to 3.
4. Three clinical types of the disease are commonly seen: acute, subacute or ulcerative and chronic or obstructive.
5. When radical surgery is indicated, primary resection is the operation of choice.
6. The prognosis should be guarded because of the tendency to recurrence (from 15 to 30 per cent).

Henry Ford Hospital.

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In answer to an inquiry about the safety and advantage of the new plastic contact lenses over those made of optical glass, *Hygeia, The Health Magazine*, says: "A plastic lens is apt to fit the eye more accurately than glass, is easier to produce and is unbreakable."

# PROGRESS IN THE ANESTHETIC DEPARTMENT OF THE KANSAS CITY GENERAL HOSPITAL IN 1940

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In 1940 the Anesthetic Department of the Kansas City General Hospital was established as an independent service. It is headed by a full-time and a part-time medical anesthetist who teach and instruct interns in the science of anesthesia. Interns in the hospital administer 98 per cent of the anesthetics under supervision of the medical anesthetists. Each intern is required to spend two weeks full time in the anesthetic department and to follow this with a three months' service on which he gives anesthetics three days a week. The interns administer an average of 100 anesthetics each, which include all types of spinal, block, intravenous, basal and inhalation anesthesia. Much stress is placed on preoperative and postoperative management and the keeping of accurate records. The records begun in 1940 include preoperative evaluation of each patient, careful records made during anesthesia and all postoperative complications. A consultation service is in operation in which the anesthesia department works with the surgical and medical staffs in the selection of the type and kind of anesthetic to be administered to a given case. The intern writes the orders for preoperative sedation under the direction of the medical anesthetist.

The records show that many cases which formerly were considered as inoperable because of the anesthetic risk are now being operated upon successfully by the proper preparation and selection of the anesthetic.

During the year 1940, 3,292 anesthetics have been administered exclusive of local infiltrations and topical anesthesia. Table 1 shows the various types of anesthetics used. Table 2 illustrates the types of anesthesia used on the various services in the hospital.

Nearly all eye work is done with either topical or intravenous anesthesia. Intravenous administration has been found highly satisfactory due to the lack of excitement during induction and recovery; the eye is centered and is at rest during light anes-

thesia which is not the case with any other type of anesthetic. Following the administration of sodium pentothal or evipal there is a low incidence of postoperative nausea and other complications most undesirable for eye patients.<sup>1</sup>

Intravenous administration of evipal, amytal or sodium pentothal has been found satisfactory for changing painful dressings on the wards, manipulating fractures and applying casts and other simple procedures. As will be noticed, the orthopedic service has used intravenous anesthesia more than any other type in the operating room as well as on the ward. Most of the intravenous anesthetics given in the out-patient department are for orthopedic procedures.

In general surgery, intravenous anesthesia is used for perineal work, skin grafts and other procedures in which abdominal relaxation is not essential. It has been given twelve times to one patient during a year's hospitalization for skin grafting. Recently, sodium pentothal has been used satisfactorily for brain surgery as it does not increase intracranial pressure and does not increase the pulse rate as much as does avertin-ether which has been the agent routinely used previously. Evipal or pentothal sodium usually are used as the anesthetic during the passage of an intratracheal tube when gas or ether are to be administered intratracheally. There have been no accidents in 1940 in connection with the use of intravenous anesthetics in 301 cases ranging in age from 6 to 88.

In operations lasting over one hour in general surgery, the majority of the anesthetics administered are either spinal or cyclopropane or a combination of the two. The combination has been especially satisfactory for gastric work, intestinal anastomoses and for gallbladder surgery in which abdominal relaxation is most desired as well as intestinal quiet. In many cases a sufficiently high spinal anesthesia alone or a deep cyclopropane anesthetic would add considerable cardiac and respiratory hazard, while a combination allows administration of safe amounts of both with perfect satisfaction. The continuous spinal technic is used for long operations of the lower abdomen especially for combined abdominal and perineal rectal resections. Anesthesia has been produced for a period as long as five hours without complications.

Table 1. *Types of Anesthesia Used*

Inhalation .....	2,410
Cyclopropane .....	461
Ethyl ether, divinyl ether, ethyl chloride .....	1,458
Nitrous oxide-oxygen .....	77
Nitrous oxide-oxygen-ether .....	64
Obstetrical anesthetics .....	350
(Complete data not available)	
Intravenous (amytal, evipal, pentothal) .....	301
Rectal (basal) avertin and ethyl ether .....	15
Spinal .....	354
Spinal and gas .....	38
Caudal and epidural .....	174
Total .....	3,292

Table 2. *Services Using Anesthesia With Number of Each Type Used*

	EENT	Ward	OPD	Ortho- pedics	Gen. Surg.	O. B.	Dent.
Anesthesia							
Ether, etc.	465	10	42	25	916		
Nitrous	5			19	41		12
Gas-ether					64		
Cyclopropane	9	2		16	434		
Unspecified						350	
Spinal			5	16	333		
Spinal-gas					38		
Intravenous	10	15	82	35	159		
Basal	3	1		1	10		
Caudal							
and epidural					174		
Total	492	33	124	112	2,169	350	12

For all brain surgery, operations about the heart and on the lungs, or for cases lying prone for long and shocking operations as for laminectomies or spinal fusions, intratracheal administration of gas or ether is used routinely. In all long neurosurgical operations rectal avertin has been used as basal anesthesia which reduces the amount of ethyl ether necessary and thereby reduces anesthetic shock. When pentothal sodium alone is used for brain surgery, an intratracheal tube is passed and oxygen is given throughout the operation.

The use of nitrous oxide and ethyl ether in surgery practically has been discontinued because of the anoxia produced during anesthesia, increased postoperative morbidity and inadequate relaxation in a high percentage of cases. It is used chiefly for orthopedic surgery in which the fluoroscope and x-ray are to be used. It also is used in the dentistry clinic when general anesthesia is required.

Tonsils are being removed under ethyl ether; recently divinyl ether is being used for induction in place of ethyl chloride. Fewer anesthetic accidents have occurred since the use of ethyl chloride in interns' hands has been limited. The ease and safety of vinethene (divinyl ether) induction preceding ethyl ether, particularly in the case of adults have been impressive. It has also been satisfactory for short anesthetics, as during the reduction of fractures, and is followed by rapid recovery and rarely by nausea or vomiting.

There has been a trend away from ethyl ether for general surgery, and this is justified by the fact that morbidity and mortality rates have been reduced greatly. Table 3 reveals that the average

hospital stay is 11.5 days for all patients operated upon under cyclopropane anesthesia, while the average stay in the hospital after ethyl ether or spinal anesthesia is 15 and 18.2 days, respectively. These figures do not include patients on the orthopedic service who often remain for several months. This table also illustrates percentage morbidity following the various types of anesthesia used, showing a general decrease in the complications from ethyl ether down to pentothal sodium.

Complete records are not available for 1940 on the number of anesthetics used on the obstetrical service. Careful records comparing cyclopropane, ether and nitrous oxide-oxygen anesthesia for difficult deliveries with special emphasis on blood loss and infant resuscitation are now being kept, the results of which will be reported at a later date.

Out of the 3,292 anesthetics there have been four deaths in the operating and delivery rooms. One occurred for an unexplained reason during nitrous oxide-oxygen anesthesia for delivery; one during pneumonectomy in which secretions from the operated side could not be removed by suction through the intratracheal tube, causing obstruction to breathing and death before bronchoscopy could be performed. One occurred following administration of a spinal anesthetic to a patient brought to the operating room as an emergency case inadequately prepared and an obviously 4 plus risk, having had an intestinal obstruction for an unknown period of time. The fourth occurred under cyclopropane anesthesia during amputation of a leg on a diabetic patient in poor condition and with generalized toxemia.

There have been fifty-five postoperative deaths

Table 3. Comparison of Morbidity Percentages for Each Type of Anesthetic and Comparative Table of Hospitalization, Exclusive of Orthopedic Cases.

	Percentage of all cases having postoperative complications				
	Ether	Cyclopropane	Spinal	Nitrous	Pentothal
Nausea and emesis	47	28	17	15	11
Distention	8	8	10.9	2	0
Catheterization and retention	21	14	15	18	4
Tachycardia	32	18	20.5	11	5.8
Pneumonia	1	1.7	2	2	0
B. P. fall without shock	3.8	3.4	1	4	0
Shock	5	1.4	2	0	0
Headache	5	6	5.7	0	2.2
Other complications, as wound infection, neuritis, cough, atelectasis, cystitis, irrational	5	10	25.7	3	5.3
Average hospitalization all cases	15	11.5	18.2	9.0	5.9
Hospitalization for appendectomies	16	9.5	10.0		
Hospitalization for herniorrhaphies	16	14.5	16.1		
Hospitalization for hysterectomies	21	19.0	18.3		
Hospitalization for cholecystectomies	18.5	19.0	18.5		
Hospitalization for salpingo-oophorectomies	16.0	14.0			
Hospitalization for D. & C.	5.0	4.8		3.0	6.0

Table 4. Mortality From All Causes and At All Times Up to Four Months Following Operation on 3,292 Cases

Complication	Avertin; Nitrous Nitrous- Cyclopropane					Ether	Spinal	Pen-gas	Spinal-Pen-gas total
	Oxide	avertin	propane	4					
Peritonitis							1		
Skull fracture, abscess, encephalomalacia	1	1							1
Coronary			2			1			
Pulmonary embolism			2			2			
Thyroid crisis		1							
Diabetic coma			2						
Circulatory failure			2				2		
Cerebral hemorrhage						1			
Nephritis and uremia	1		3						
Postoperative hemorrhage									1
Carcinomatosis							2		
Cachexia							2		
Generalized toxemia							3		
Pancreatitis and necrosis			1						
Shock			1			2			
Pneumonia	1		5				3	2	1
Lung abscess (tracheoesophageal fistula)							1		
Total	3	2	22			5	15	5	3

from all causes and at all times from a few hours to four months following the original operation. Most deaths have occurred from two to three weeks postoperatively. Table 4 gives data on these deaths and the causes. The high number following cyclopropane anesthesia is explained by the fact that this anesthetic is administered to patients who are extremely bad risks, who are operated upon in the presence of shock, who have far advanced cardiac failure or are already moribund.

#### CONCLUSION

Since establishment of an independent anesthetic service at the Kansas City General Hospital, a marked decrease in postoperative morbidity, mortality and hospitalization has been noted. Preoperative consultation and adequate preparation as well as suggestions by the medical anesthetists on postoperative care have been responsible for this improvement. All types and methods of anesthetic administration are now satisfactorily employed by the interns of the hospital under constant supervision of medical anesthetists, allowing unlimited possibilities for surgery. Anesthetic mortality and morbidity are now reduced to a minimum figure.

Kansas City General Hospital.

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## CASE REPORT

### ACQUIRED HEMOLYTIC JAUNDICE

#### REPORT OF A CASE

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Hemolytic jaundice is a disease characterized by fever, acholuric jaundice, anemia, splenomegaly, reticulocytosis and the presence of excessive amounts of urobilinogen in the urine. The disease was first described by Minkowski in 1890 but three years earlier Spencer Wells had performed a splenectomy on a patient with jaundice. This was the first known case of hemolytic jaundice cured by operation. This patient was found to be in good health forty years after the operation despite a persistently increased red cell fragility. Her son too was known to have hemolytic jaundice.

The literature is filled with isolated case reports and reports of series of cases of hemolytic jaundice of the familial or congenital type. As to the so-called acquired type, there is serious doubt in the minds of many men as to whether such an entity actually exists. The acquired type was first described by Widal in 1908. In general, this type dif-

fers from the congenital in absence of a family history of the disease, a more severe and persistent anemia, a higher degree of reticulocytosis, a macrocytic type of anemia and a less favorable response to splenectomy. It should be emphasized, however, that the absence of a familial history does not necessarily exclude the congenital type of this disease. Such men as Dawson<sup>1</sup> and Sharpe<sup>2</sup> do not believe that a true acquired form of hemolytic anemia exists. There are many atypical anemias comprising a heterogenous group of conditions in which there is increased red cell destruction and splenomegaly which are not benefited by splenectomy. Thompson<sup>3</sup> reported fifteen such cases of atypical hemolytic anemia. These included three cases of reticulum cell sarcoma of the spleen and syphilis and tuberculosis of the spleen. Watson<sup>4</sup> found that fifteen cases of macrocytic acquired hemolytic anemia were secondary to some other condition. In his series there were eight cases of liver disease, three cases of Hodgkins disease, two cases of leukemia, one case of hyperthyroidism and one case of chronic bleeding into an ovarian cyst. "The existence," he says, "of a primary form of acquired hemolytic jaundice has been questioned more and more in recent years." On the other hand, Brenizer<sup>5</sup> reported two cases, Reynolds,<sup>6</sup> Weber,<sup>7</sup> and Freund<sup>8</sup> each one case, Rostettes and Murphy<sup>9</sup> two cases, and Bell<sup>10</sup> one case of acquired hemolytic jaundice. Reynold's case was unusual in that the patient, a 21 year old white male, had a reticulocyte count of 95 per cent. The red cell fragility however was normal. This phenomenon perhaps can be explained by the fact that the fragility of the younger erythrocytes is much less than that of the older. In both of Brenizer's cases the anemia was profound, being 1,352,000 with 30 per cent hemoglobin and 1,200,000 with 28 per cent hemoglobin respectively. The case here reported is similar in many respects to these cases both in the degree of reticulocytosis and the depth of the anemia.

The mechanism of the increased fragility of the red cell which is the underlying phenomenon in this disease is as yet not understood. Some interesting ideas, however, by way of explanation have been put forth by Haden.<sup>11</sup> It is known that in lower animals as the erythrocyte changes toward a globular shape in different species the resistance of the cells to hypertonic saline solution decreases in almost direct proportion. Haden has shown that the red blood cells in hemolytic jaundice exhibit spherocytosis as shown by the increased volume, thickness ratio; that there is a direct relation between this index and the fragility of the red cell, and that these spherocytes have at the beginning one of the shapes through which a normal erythrocyte must pass when placed in successive dilutions of hypotonic salt solution. The spherocytes therefore, he concluded, must be nearer the hemolysis point than the normal disk-shaped red cell. Vaughn,<sup>12</sup> on the other hand, believed that the fault lay with the spleen. In a study of thirty-five

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splenectomized patients he found that cell fragility persisted but that spherocytosis was lost in 50 per cent of the twenty-five cases examined for spherocytes. He concluded, therefore, that the spleen exerted some unusual influence upon the constitution of the cell, thus affecting its shape. Hence, spherocytosis is not inherent in the red blood cell itself.

Whatever be the merits of these arguments, the blood smear of our patient revealed relatively few spherocytes. Their numbers at least could not possibly account for the degree of hemolysis and the increased cell fragility which was found.

#### REPORT OF CASE

Mrs. L. T., white female, aged 38, entered the hospital on March 6, 1940, complaining of increasing jaundice and fatigue for the last four weeks. On questioning she admitted that for four months she had felt distinctly below par. The patient, although thin, had always enjoyed good health but for a month prior to admission had noticed that she was paler than usual, that her skin and sclerae had become yellow and that she tired on the slightest exertion. In addition, she noted that she had a low grade fever, that she had frequent dizzy spells and that her urine had become very dark. There were no gastrointestinal or genito-urinary disturbances. The patient had lost fifteen pounds in the preceding year.

The past history was unrevealing. She had had scarlet fever during childhood but no other serious illness. The family history was essentially normal. Four sisters were alive, one of them a sufferer from bronchial asthma. Careful questioning brought out no history of anemia, jaundice or any blood disease in the patient's immediate family or in any of her blood relatives.

The physical examination on admission revealed a well developed but thin and asthenic white female lying quietly in bed. She appeared toxic and chronically ill. The skin and mucous membranes were pale but in addition to this pallor there was a marked icterus of the skin and sclerae. The temperature was 100 F., pulse 86 per minute and regular, and the respirations 22 per minute. There was no generalized glandular enlargement. The blood pressure was 125/70. On palpation the spleen which was firm and not tender could be made out 2 cm. below the costal margin while the liver edge extended 5 cm. below the right costal margin. The pelvic examination as well as the other

phases of the general examination gave essentially normal findings.

The laboratory data on admission revealed red blood cells 1,300,000; hemoglobin 25 per cent (Sahli); white blood cells 10,200; differential count, 2 per cent basophils, 12 per cent eosinophils, 1 per cent juveniles, 5 per cent stab, 50 per cent segmented, 17 per cent lymphocytes and 5 per cent monocytes. The urine was normal except for a strongly positive urobilinogen reaction (Ehrlich's reagent). The reticulocyte count was 65 per cent. The blood smear revealed anisocytosis, poikilocytosis and many nucleated red blood cells. When the reticulocyte count was at its height, large ghost-like erythrocytes, poor in hemoglobin yet showing reticulum, could be seen. At the same time there was a number of hyperchromic cells. The icterus index was 75. The rest of the blood chemistry was essentially normal. Cell fragility tests revealed beginning hemolysis at .65 per cent saline and complete hemolysis at .44 per cent (control .44 per cent and .34 per cent).

In view of the findings of acholuric jaundice, large spleen, urobilinogenuria, severe anemia, high reticulocytosis, increased cell fragility and absence of indicative family history, a diagnosis of hemolytic jaundice of the acquired type was made. She was treated symptomatically. She ran an irregular temperature curve, the fever at times rising to 102.4 F. The patient received two transfusions of 100 cc. and 400 cc. citrated blood on successive days just preceding the operation. Generalized urticaria followed the second transfusion but no other ill effect was noted. On her fourteenth hospital day splenectomy was performed by Dr. J. G. Probstein. During and subsequent to the operation red cell counts were made. The results of these determinations are shown in table 1. The patient made an uneventful

Table 1. Blood Studies During Operation of Splenectomy

Time	Red Blood Cells (Millions)	Reticulocytes (Per Cent)
Immediately before operation	1.97	
Skin incision (1½ gr. ephedrine sulphate intramuscular)	2.14	19
Spleen manipulated	1.37	
Pedicle of spleen ligated	1.35	
Thirty minutes after splenectomy	1.79	28

recovery, the icterus index and urobilinogenuria slowly returning to normal. At the time of her discharge twenty-two days after the operation the urine was nor-

Table 2. Blood Studies on Patient

Date	W.B.C. (Thousands)	R.B.C. (Millions)	Hb. (Sahli)	Reticulocytes	Normoblasts	Basophils	Eosinophils	Juveniles	Stabs	Segments	Lymphocytes	Monocytes	Hemolysis Began	Hemolysis Complete
3/ 6	11.6	1.2	25%				10	1	7	53	22	5		
3/ 8				65%									.50%	.46%
3/ 9	20.2	1.31		55%		1	5		8	66	16	4		
3/10	16.9	1.30	25%											
3/13	13.	1.31	25%	74%	25		1		6	76	15	2		
3/17				92%										
3/21	11.	1.87	30%		28				4	84	12			
3/22				33%										
3/23	8.7	1.95	40%	27%										
3/25	10.7	2.15		14%	12		7		2	70	17	4		
3/27	11.3	2.44	40%	18%	5	2	8		7	60	18	5		
3/30	10.4	2.18	40%	14%	Rare								.58%	.36%
4/ 8	9.5	2.88	51%	10%	0									
4/11	8.6	2.68	50%	6%	0		2		10	72	12	3		
5/ 7	10.1	4.1	72%	3%			11	1	56	25	7		.52%	.40%
6/18				1½%			9		4	48	37	2		
7/20	8.4	4.26	82%	1½%			10		4	50	34	2	.46%	.36%
11/ 3	9.6	4.34	78%	1½%	Rare		2		8	52	35	3	.46%	.36%

mal, the red cell count was increasing and the reticulocyte count had dropped to only 6 per cent. Spherocytosis and increased cell fragility were still present however. Blood studies made during the patient's hospital stay and subsequently are shown in table 2. It will be noted that seventh months after operation the reticulocyte count was normal and, strangely enough, the cell fragility was normal and spherocytosis had ceased to exist. The report of the pathologist, Dr. S. Gray, who examined the sections of the spleen was as follows: "The malpighian corpuscles appear to be fewer in number and for the most part are rather small. A few of them however are of good size with rather large active germinal centers showing occasional mitosis and narrow collars of lymphocytes around them. The sinusoids are dilated markedly leaving only scant islands of pulp here and there. The sinusoid endothelium exhibits a small amount of hyperplasia. This is irregular in character, however, sometimes the cells giving a low serration to the vessel and at other times appearing large and polygonal and occurring only in groups. The pulp is found to consist of large reticulum cells among which are dispersed some normoblasts."

## COMMENT

This case was extremely interesting because of the severity of the symptoms. Clinically it seemed to fit the picture heretofore described as acquired hemolytic jaundice. Since the family history was entirely negative, it was decided to investigate the red cell fragility of all the siblings. The mother and father were dead. The results of these examinations are given in table 3. These show that there

Table 3. Cell Fragility Tests of Siblings of Patients

Subject Patient	Age	Hemolysis Began (Per Cent)	Hemolysis Complete (Per Cent)
T. F.	38	.65	.44
N. K.	40	.46	.32
R. B.	43	.46	.34
B. B.	33	.46	.34
Control	30	.46	.34
		.44	.34

was no evidence of abnormal red cell fragility or reticulocytosis in the four siblings.

The question of transfusion as a therapeutic measure during a hemoclastic crisis usually arises. The question is a serious one for many reactions, some of them fatal, have been reported when blood is given to patients suffering with this malady. Doan, Curtis and Wiseman,<sup>13</sup> Dawson,<sup>1</sup> Payne<sup>14</sup> and Sharpe and Davis<sup>15</sup> have reported reactions from transfusion. Dawson has reported two deaths and Payne one death from anuria. This, they believe, resulted from the blocking of the renal tubules by masses of acid hematin pigment. An acute hemoclastic crisis may be initiated by transfusion. These are characterized by an increase in fever, anemia, reticulocyte count, jaundice, urobilinogen excretion in the urine and spleen size. Transfusion was given to this patient with these possible hazards in mind but aside from a moderate urticaria no ill effect was noted.

Splenectomy which produces such an amazing result in the classical familial type may be less successful in the acquired or atypical type of hemolytic jaundice. The first report in the American

literature of splenectomy for hemolytic jaundice was by Elliot and Kanavel<sup>16</sup> in 1905. They reported two deaths in a series of forty-eight cases collected from the literature up to that time. Pemberton<sup>17</sup> reported four deaths in 118 patients whose spleens were removed because of this disease. Giffin<sup>18</sup> in eighty-one cases found a mortality of less than 5 per cent. Death in these series was due to peritonitis, hemorrhage, uremia and splenic vein thrombosis. Reports of the unsuccessful removal of the spleen dot the literature. West-Watson and Young<sup>19</sup> reported a "failed splenectomy" in a case of acquired hemolytic icterus. At operation gall stones were found but following splenectomy no improvement was noted. Four months later the gallbladder and an ovarian teratoma were removed, whereupon the hemolysis ceased and signs of toxemia disappeared. Freund<sup>8</sup> reported a case in which operation was unsuccessful because of an accessory spleen which was discovered at autopsy later. Two cases of the acquired type reported by Brenizer<sup>5</sup> were cured by splenectomy as was also one described by Reynolds.<sup>6</sup>

As can be noted from table 2, our patient made a rapid recovery following splenectomy and has remained free of symptoms since. The changes in the red cell count during the operation and immediately after were not those that have been described by some observers. Increase in the cell count by a million has been noted by some during the operation.<sup>20</sup> This autotransfusion has been thought to be due to contraction of the engorged spleen which is manipulated during the operation (table 1).

The reticulocyte count of 92 per cent obtained on one occasion is extremely high and is another sign of the severity of the hemolysis seen in this disease. In Reynold's case, a reticulocytosis of 95 per cent was reached. The familial type may also reach such high levels since Baty<sup>21</sup> reported a count of 92 per cent in his case.

## SUMMARY

A case of hemolytic jaundice of the acquired type is presented. This case was unusual because of the extreme toxicity and hemoclastic activity as denoted by marked anemia, jaundice, enlarged spleen, fever and reticulocyte count which at one time rose to 92 per cent. Cell fragility tests on all living members of the immediate family showed no decrease in the resistance of their red blood cells to hypotonic saline solution. In view of these findings we believe this is a case of hemolytic jaundice of the acquired type apparently cured by splenectomy.

603 Metropolitan Building.

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#### MASSIVE DOSE OF LIVER EXTRACT OF VALUE FOR PERNICIOUS ANEMIA

The results he obtained with 19 patients indicate that the majority of persons with pernicious anemia who are in relapse can be given single massive doses of liver extract which will establish and maintain a normal blood count with satisfactory clinical improvement for several months, John Martin Askey, M.D., Los Angeles, reports in *The Journal of the American Medical Association* for September 13.

The data obtained from his study of the cases also indicate, he says, that the liver storage deficiency of the substance responsible for pernicious anemia may be largely replenished by an initial massive dose.

"Since the object is to keep the liver in a state of optimum storage," the doctor declares, "injections at long intervals following the first injection would not be advisable. Replacement of utilized (anti-pernicious anemia) material (in the liver) should be made at regular and not infrequent intervals. Monthly injections of suitable amounts would seem sufficiently frequent.

"Further data are necessary to determine the amount of the initial dose needed to effect complete liver storage in the individual case and the dose needed to maintain complete liver storage. Investigation in the future must be directed at determining how quantitatively to correct the fundamental deficiency in the disease rather than how to correct the symptoms and signs."

The author says that satisfactory clinical, blood and nerve reactions were experienced by 16 of the 19 patients who were given large doses of beef liver extract. There were severe relapses owing to inadequate treatment; 3 of them, because of dangerously low blood volumes, needed immediate transfusions. The 16 had remissions of an average of several months' duration after the single massive dose.

Dr. Askey explains that the liver of a patient who has pernicious anemia and is in relapse contains no detectable amount of the as yet unidentified anti-pernicious anemia substance. Since the liver of the cow is the only bovine organ that stores this particular sub-

stance, the doctor says that it is probable that the liver is the only human organ in which it is stored.

"Therefore," he says, "treatment is true substitution therapy, supplying an ultimately essential principle but doing nothing directly to remove the cause of the primary deficiency. . . . Just how much of this essential substance the liver of the patient in relapse needs is not known. Since it contains no detectable amount, it must lack the amount stored in the normal human liver."

He explains that indirect estimation of the degree of storage after massive treatment is possible only by observing the response as indicated by changes in the blood. The length of time during which the blood level remains normal after a massive dose should reflect the amount of storage. It was on this basis that he conducted his investigations.

#### HEPARIN AND SULFATHIAZOLE EFFECTIVE FOR RARE BUT HIGHLY FATAL AILMENT

The combined use of heparin, a recently discovered anticoagulant, and sulfathiazole proved effective in the treatment of a case of cavernous sinus thrombosis, a comparatively rare but highly fatal condition involving a clot in a large blood cavity back of the eye next to the brain, Irving L. Ershler, M.D., and Irl H. Blaisdell, M.D., Syracuse, N. Y., report in *The Journal of the American Medical Association* for September 13. Their experience in this case, however, shows that extreme caution must be exercised in the use of heparin because of the possibilities of dangerous bleeding in vital areas within the body.

"Theoretically the combination of heparin and sulfathiazole should yield better results in the treatment of cavernous sinus thrombosis than any other measures previously employed," the two physicians say. "Heparin prevents extension of the thrombus (clot), thus allowing for its lysis (dissolution). Sulfathiazole not only affords an effective means of combating the original focus of infection but maintains the sterility of the blood stream, thereby preventing meningitis (inflammation of the membrane linings of the brain), septic emboli (putrified blood clots brought by the blood stream from some other portion of the body and forced into a small blood vessel so as to obstruct circulation) and other sequelae.

"The intravenous (into the vein) administration of heparin produces a significant prolongation of the coagulation time, which is in fact a hemorrhagic diathesis (the same as an inherited disposition to hemorrhage). Consequently there may be produced dangerous bleeding in vital areas of the body. . . . Bleeding from cerebral (brain), pulmonary (lung) or coronary (heart) vessels might conceivably result in disaster."

In their case report the two men say that the patient, a college girl aged 22, had a blood coagulation time of two and one-half minutes before they started administering heparin. During the nine days that heparin was administered they endeavored to maintain an approximate coagulation time of two hours. Two days after the administration of heparin was started blood began to appear in the urine and during successive days the condition continued and increased in severity and there also was evidence of hemorrhage into both elbow joints. At the end of nine days the condition of the patient had progressed to the point where it was decided to discontinue the administration of heparin and sulfathiazole. Thirteen hours later the urine began to clear up and the administration of sulfathiazole was reinstituted. Within a few days the urine was entirely clear and the previously immobile elbow joints rapidly resumed normal function. The blood coagulation time promptly returned to normal and three blood transfusions relieved the anemic condition of the blood in a few days.

# THE JOURNAL

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OCTOBER, 1941

## EDITORIALS

### THE KANSAS CITY SOUTHWEST CLINICAL SOCIETY ANNUAL FALL CLINICAL CONFERENCE

For the nineteenth consecutive year, the Kansas City Southwest Clinical Society will present its Annual Fall Clinical Conference in Kansas City, Missouri, October 6, 7, 8 and 9, 1941.

Fifteen distinguished guests from various cities of the United States will present phases of medical advancement with which they have been identified from research and clinical viewpoints. Clinicians from Greater Kansas City will participate in the program.

Scientific exhibits worthy of study are being prepared by members and technical exhibits of new remedies and mechanical devices of modern medicine will be displayed in greater numbers than in former years.

The clinical conference, pioneered in Kansas City almost twenty years ago, is now established in many cities throughout the country. The basic idea for clinical conferences is the continuing education of the physician, general practitioner or specialist, who is caring for the American public.

The *Kansas City Medical Journal* containing the program of the Conference will be sent upon request to the Kansas City Southwest Clinical Society, 208 Shukert Building, Kansas City.

### ACCIDENTS IN PUBLIC PLACES

Four per cent of all deaths and 50 per cent of all accidental deaths occurring annually in urban areas of the United States are due to accidents in public places. Approximately 50,000 deaths occur annually from accidents in public places as streets, highways, buildings, parks and beaches. Accidents in public places cause one third as many deaths annually as all infectious and parasitic diseases combined and more than diabetes and appendicitis combined.

Motor vehicles are responsible for approximately 70 per cent of all fatal public accidents. More than

48 per cent of public accidents disabling for one or more weeks are due to motor vehicles, the rate being 3.17 per 1,000 for these accidents and 3.43 for public accidents exclusive of motor vehicle accidents. The rates for disability for one month or more are 1.83 per 1,000 persons for public accidents involving motor vehicles and 1.77 for public accidents exclusive of motor vehicle accidents.

The average duration of disability from public accidents disabling for one week or more was fifty-one days. For motor vehicle accidents the average disability was six days longer than the total average.

The frequency of public accidents is 46 per cent higher for males than for females, the rate for males being 7.90 per 1,000 and for females, 5.40.

Age group incidence varies widely as follows: less than 5 years, 1.63 per 1,000; ages 5 to 9 years, 6.32; ages 10 to 14 years, 7.73; ages 15 to 24 years, 7.04; ages 25 to 44 years, 5.78; ages 45 to 64 years, 8.00; age 65 years and older, 9.94. The average duration of disability increases with age from thirty-six days for children less than 5 years to seventy-seven days for persons 65 years and older with the exception of the age group 10 to 14 years for which it is thirty-four days.

Motor vehicles are the means of injury in 48 per cent of public accidents, falls in 40 per cent, transportation facilities other than motor vehicles in 3 per cent, cutting and piercing instruments in 3 per cent, animals in 1 per cent and all other means in 6 per cent.

### NATIONAL YOUTH ADMINISTRATION EXAMINATIONS

Since April 1, 1941, the National Youth Administration for Missouri has conducted 6,930 health examinations. These records were sent to the NYA Health Records Tabulation Project in Chicago which has submitted a report of a study of the first 3,038 health examination records.

Previous to the NYA health examination 499 of this number had never been to a physician and 1,024 had never been to a dentist. Of the 3,038 youths, 2,596 had carious teeth, 105 having as many as ten and sixteen having as many as eighteen carious teeth each. Of the 442 who did not have carious teeth, many had tartar and the teeth needed attention.

In the tests of hearing, forty were more or less deaf and two were deaf and dumb.

One hundred twenty had diseases of the lungs, diagnosed without roentgen ray examination. Without doubt when the portable roentgen ray unit of the NYA begins functioning this number will be increased greatly. There were 388 who had diseases of the nose, some needing medical and some surgical attention.

Diseases of the eye, other than the need of

Klebba, Joan, and Britten, Rollo H.: Public Accidents Among the Urban Population as Recorded in the National Health Survey, Pub. Health Rep. 56:1419 (July 11) 1941.

glasses, were found in 189. There were 872 who needed their eyes tested for glasses and 252 were more or less color blind.

Only 826 were within the normal range of weight, 1,387 being below normal weight and 825 above with 143 classified as pathologically obese. Marked malnutrition was indicated in 208.

Previous to the NYA health examination 629 had never been vaccinated against smallpox; 330 had had an attack of smallpox. Eighty-one had had typhoid fever.

Routine blood tests for syphilis showed 173 positive and twenty-two had a definite diagnosis of gonorrhea by laboratory tests.

In the examination of the urine 213 showed abnormal findings, forty-one showing sugar and 153 albumin. Other abnormal findings were blood and pus in the urine.

Orthopedic defects were found in 108 and fifty were considered handicapped by the degree of flat-foot from which they were suffering.

Forty-three were classified as subnormal mental cases and 108 had nervous and mental abnormalities.

Of the 3,038 youths, 641 had diseases of the skin; sixty had diseases of the rectum; fifty had hernia; 696 had diseases of the genito-urinary system; 199 had diseases of the heart; 386 had abnormally low blood pressure; 834 had abnormally high blood pressure; forty-eight had diseases of the endocrine glands, twenty of these of the thyroid.

Only eighteen were in such physical condition that no recommendation was made by the physician in regard to medical care. As many as 267 had five recommendations each and two had eight recommendations for medical attention needed.

The NYA adopted a system of classification and placed 2,973 of the Missouri youths as follows:

Class 1. Fit for any work or athletic activity, no defects or only very slight defects, sixty-one youths.

Class 2. Fit for any work or athletic activity; abnormal conditions present can be corrected by proper measures, medical, dental, exercise or diet, 1,884 youths.

Class 3. Fit for almost any kind of employment or recreational activity; minor defects not thought to be amenable to correction but not severely handicapping; physician to indicate types of work to be avoided or to approve assignment, 611 youths.

Class 4. Fit only for certain kinds of employment or recreational activity; physician to approve assignment and to state whether there is necessity for medical supervision of the youth during employment, 368 youths.

Class 5. Temporarily unfit for any employment or recreational activity; classification in this class implies subsequent reclassification to class 1, 2, 3 or 4 after the termination of the temporary period of unemployability, forty-six youths.

Class 6. Permanently, or for a prolonged period, unfit for any employment or recreational activity, three youths.

## NEWS NOTES

Dr. Hugh G. Hamilton, Kansas City, was a guest of the Lyons County (Kansas) Medical Society on September 2 and spoke on "Medical Aspects of Obstetrics."

Dr. E. H. Skinner, Kansas City, spoke before the Kiwanis Club of North Kansas City on September 3 on "The Role of the Physician in the Defense Program."

Drs. T. K. Brown, Nathan A. Womack and Theodore E. Walsh, St. Louis, were guests of the State Medical Society of Wisconsin at its Centennial Meeting at Madison, Wisconsin, September 10 to 12.

The State Board of Health recently approved the grades of 186 applicants who passed the State Medical Board examination and approved ten applicants for license to practice medicine in Missouri by reciprocity.

The Annual Conference of Secretaries of Constituent State Medical Associations will be held at the American Medical Association, Chicago, November 14 and 15. Officers of county medical societies are invited to attend the meeting.

The Platte County Unit of the Division of Local Health Administration of the State Board of Health was opened on July 8. This is the twelfth unit in the state and the fourth to be established in 1941. Dr. E. W. Cline, Platte City, is health officer of the Platte County Unit.

The Association of Military Surgeons of the United States will meet October 29 to November 1 at the Brown Hotel, Louisville, Kentucky. All members of the medical profession are invited to attend as guests, particularly members of the Medical Defense Committees.

Dr. Albert N. LeMoine, Kansas City, will speak on "Allergy and Ophthalmology," and Dr. Alfred J. Cone, St. Louis, on "Treatment of Sinus Diseases in Children" at the forty-sixth annual meeting of the American Academy of Ophthalmology and Otolaryngology in Chicago, October 19 to 23.

The staff of the Ellis Fischel State Cancer Hospital, Columbia, announces that the regular monthly Clinical Pathological Conferences will begin again on September 16 and will be held on the third Tuesday evening of each month through May 1942 in the conference room at the hospital. All members of the medical and nursing professions and students are invited to attend the conferences.

The St. Louis Health Division again this year will conduct an Educational Anti-Diphtheria Campaign during the month of October. During the last six years the number of cases of diphtheria in St. Louis have decreased 89 per cent and the number of deaths 80 per cent. Up to September 1 of this year there have been thirty cases and one death. Since all children in St. Louis have not been immunized and many children have come into St. Louis and more will come incident to the defense program, the St. Louis Health Division feels that this year even greater effort should be made to prevent an increase in diphtheria and that this can best be accomplished by immunizing every child in the community, especially those less than 10 years of age.

## DEATHS

**Clay, Andrew Jackson, M.D.**, St. Charles, graduate of St. Louis University School of Medicine, 1918; member of the St. Charles County Medical Society; aged 52; died May 20.

**Phillips, Eldon, M.D.**, Cape Girardeau, graduate of the Missouri Medical College, 1883; honor member of the Cape Girardeau County Medical Society; died May 21.

**Goldstein, Max Aaron, M.D.**, St. Louis, graduate of the Missouri Medical College, 1892; member of the St. Louis Medical Society; Fellow of the American Medical Association; member of the American Board of Otolaryngology; aged 71; died July 27.

**Rainey, Warren R., M.D.**, St. Louis, graduate of Northwestern University Medical School, 1910; member of the St. Louis Medical Society; Fellow of the American Medical Association; member of the American Board of Surgery; aged 54; died July 28.

## MISCELLANY

### EMERGENCY MEDICAL SERVICE FOR CIVILIAN DEFENSE

The Medical Division of the United States Office of Civilian Defense, Washington, D. C., has issued its first bulletin, entitled "Emergency Medical Service for Civilian Defense." That physicians may be advised of this work, the bulletin is reprinted.

#### Medical Provisions for Civilian Defense

The activities of the U. S. Office of Civilian Defense are concerned primarily with the protection of lives and property in the event of enemy action. To its Medical Division is entrusted the responsibility for the preparation of plans for Civilian Defense designed to prevent or alleviate the medical and public health hazards to which the civilian population may be exposed.

This bulletin is the first of a series of recommendations to State and Local Directors of Civilian Defense concerning the augmentation of medical facilities in their area. It presents a simple basic plan for the organization of Emergency Medical Field Units related to hospitals, which can be adapted to the needs of any community. It directs attention to the possible future requirements for expansion of hospital facilities both within a community and outside its boundaries. To this end, it recommends the immediate preparation of a

local inventory, a report of which should be filed in duplicate with the Area Office of Civilian Defense. It also recommends that steps be initiated in each local area for the rapid expansion of nursing facilities through intensive training of adequate numbers of nursing auxiliaries.

To those who do not as yet appreciate the need for action, I should like to quote from a similar official bulletin issued in England in 1938 just prior to the beginning of hostilities, which describes measures for safeguarding the civilian population:

"The need for [these measures] is not related to any belief that war is imminent. It arises from the fact that the risk of attack from the air, however remote it may be, is a risk that cannot be ignored, and because preparations to minimize the consequences of attack from the air cannot be improvised on the spur of the moment but must be made, if they are to be effective, in time of peace."

Whether or not we regard danger to the lives and the property of our people as imminent, I would urge that immediate steps be taken to carry out these recommendations of the Office of Civilian Defense in every State along our seaboards and in industrial areas in the interior.

F. H. LA GUARDIA,  
U. S. Director Civilian Defense.

Washington, D. C.  
July 30, 1941

#### Emergency Medical Service for Civilian Defense

Current developments in techniques of warfare leading to the possibility of unheralded bombing of civilian populations as well as potential hazards from sabotage, make imperative the preparation of facilities for providing medical service to casualties that may result from such incidents. The need for these emergency facilities may not arise, but their organization must be a fundamental part of our Civilian Defense program. It is the purpose of this bulletin to outline the essentials of an Emergency Medical Service and to describe a type of organization by which these essentials may be achieved.

The Medical Division of the Office of Civilian Defense is charged with the preparation of plans for emergency medical service and equipment. It also maintains liaison with other Federal agencies concerned with public health and medical care. In addition, an officer of the United States Public Health Service is designated to serve as medical liaison to Civilian Defense Area Office.\*

Because of geographical and administrative diversity in various parts of the country, general plans are presented as recommendations to State and local defense councils for adaptation to meet the needs of the different areas. The general adoption of a common pattern in organization and equipment for civilian defense is highly desirable so that adjacent communities may pool or exchange emergency resources in time of need.

Local administrative areas for civilian defense will frequently extend beyond municipal or other political boundaries. Such administrative civilian defense areas may be defined by State Defense Councils. It is important that the Emergency Medical Service be integrated at all administrative levels with welfare, police, and other emergency services.

#### I. Local Chief of Emergency Medical Service

An Emergency Medical Service should be organized as a section of the local defense organization in each area under a director responsible to the local Director of Civilian Defense. It is recommended that the local

\*Missouri is in the Seventh Civilian Defense Area with headquarters at 620 World Herald Building, Omaha, Nebraska.

of four doctors, four or more nurses, and four or more orderlies or nurses' aides, one of the physicians in each squad to act as squad leader. Each of the squads should be on first call during a 12-hour period of the day. The personnel and equipment of a squad should be divisible into four teams, capable of functioning if necessary at separate sites of disaster. At least one Unit of this size or two Units with small squads are advisable for populations up to 50,000.

It will be advisable to organize physicians and nurses engaged in private practice in the area into reserve Emergency Field Units related to hospitals. In areas with small hospitals whose resident staffs cannot be depleted, the primary Emergency Unit of a hospital may be made up in whole or in part of practitioners from the community.

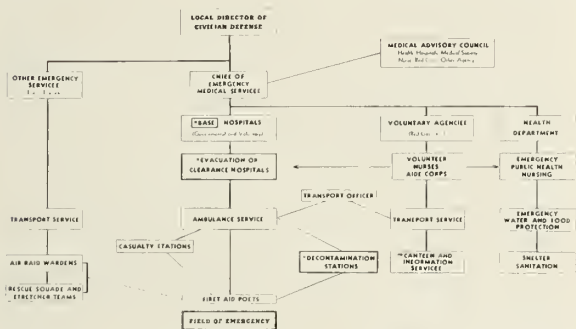
B. *Transportation*.—A hospital ambulance, station wagon, small truck, or passenger vehicle will be adequate to transport the personnel of a squad and their equipment to the site designated by the local Director of Civilian Defense for the establishment of a Casualty Station. On return trips to the hospital with casualties such vehicle will be available for transportation of additional squads and equipment if required. Hospitals which do not maintain an ambulance service will find it necessary to provide for transportation, utilizing private or municipal ambulance services, small vehicles of the police, fire, or other municipal departments, station wagons, or passenger cars. Special racks (see separate memorandum of the Medical Division of the Office of Civilian Defense) can be installed in private ambulances and in station wagons and small trucks so that they may be utilized in an emergency for the transportation of four or more stretcher patients at a time.

Private vehicles recruited for ambulance purposes by the American National Red Cross or other agency should be assigned to a hospital or to a designated parking center under the control of a transport officer.

**C. Medical and Surgical Equipment.**—The medical and surgical equipment for a squad should consist of a working supply for each physician's team and a reserve supply of sterile dressings and equipment in drums or packs from which the working supply of the teams may be replenished. The working supply of each team is best carried in a portable bag, box, or haversack provided with suitable compartments. A list suggesting minimum equipment will be available in a separate memorandum (Bulletin No. 2).

The provision of working supplies in a separate container for each physician will permit the squad of a Casualty Station to split off teams of one physician and assistants who can be dispatched to set up subsidiary First Aid Posts at other sites.

**D. Casualty Stations and First Aid Posts.**—Upon arrival at the site of a disaster, the squads of the Emergency Medical Units which have responded to the appropriate alarm will set up Casualty Stations at the sites designated by the local Director of Civilian Defense. The location of a Casualty Station should provide safety, shelter, and accessibility. Stretchers, cots, and blankets will have arrived in a truck carrying the Rescue Squad of the police, fire, or other municipal department. Until released by authority of the local Director of Civilian Defense, the physicians and nurses of the Emergency



**\*\*In some communities Canteen, Information, Evacuation and Rehousing Services will be the responsibility of the Welfare Department.**

The local Chief of Emergency Medical Service should be Chairman of a Medical Advisory Council. This Council might well include the local health officer, an experienced hospital administrator, a physician recommended by the local medical society because of his technical experience and executive ability, a registered nurse, and a representative of the American National Red Cross and other voluntary agencies.

In States on both seaboards and in vulnerable industrial areas in the interior, general hospitals, both voluntary and governmental, including Veterans' Administration Facilities and the Marine Hospitals of the United States Public Health Service, should organize Emergency Medical Field Units and assemble basic equipment. An Emergency Medical Field Unit should consist of two or more squads, and a physician should be appointed to command the entire unit. Squad leaders, in turn, should be designated. The size of the Emergency Field Unit should be in proportion to the bed capacity of the parent hospital. All members of Field Units should be instructed in first aid,\* including care of burns, prevention of shock, control of hemorrhage, emergency treatment of fractures and wounds, and in the technique of decontamination.

A. *Personnel*.—Small Squads: In hospitals of less than 200 beds, it is recommended that the Emergency Field Unit consist of two squads, one for each 12-hour shift of the day. Each squad should be composed of two physicians, two or more nurses, and two or more orderlies or nurses' aides, and be capable of functioning, if necessary, as two separate teams. At least one Unit of this size is advisable for a population up to 25,000.

**Large Squads:** In hospitals of more than 200 beds the Emergency Field Unit should consist of two squads

\*Advanced First Aid course prepared by the Office of Civilian Defense in collaboration with the American National Red Cross.

Medical Unit should remain at their station, to which the injured will be directed or transported on stretchers by the Rescue Squads and volunteers enlisted by them for this purpose. The work of the Casualty Station is to be limited to emergency first aid procedures—the relief of pain, prevention of shock, control of hemorrhage, care of burns, application of simple splints and of surgical dressings and, not least, the preservation of morale by the establishment of confidence. The seriously injured will be evacuated as rapidly as possible by ambulance or other vehicle to a hospital. Those with minor injuries will go to their homes or to temporary shelters.

If necessary, the squad leader in charge of a Casualty Station may split off one or more teams of one physician and assistants, dispatching them to set up subsidiary First Aid Posts at other sites.

It will be advisable for the local Chief of Emergency Medical Service to prepare a spot map of the area to indicate all out-patient clinics, health centers and their substations, and all police and fire stations or other sites which could serve in an emergency as Casualty Stations or First Aid Posts. He should also maintain an inventory of available transportation.

**E. Decontamination Stations.**—A subsequent bulletin will deal with the structural requirements of Decontamination Stations and with details concerning the care of casualties from chemical agents.

**F. Rescue Squads and Stretcher Teams.\***—Casualties will be conducted on foot or transported on stretchers to the nearest Casualty Station or First Aid Post by Rescue Squads of the police, fire, or other municipal department. These Rescue Squads may be assisted by Air Raid Wardens and by volunteers enlisted at the time. Police and fire reserves should be well trained in first aid and stretcher bearing, and organized into Rescue Squads of four or eight, headed by a squad leader. By the addition of volunteers, a Rescue Squad is capable of being multiplied into as many stretcher teams as there are members, each trained member becoming the leader of a team.

Provision should be made for the storage of standard stretchers, collapsible cots, and blankets in designated locations, such as police and fire stations, hospitals, health centers, or other suitable place. The number of standard stretchers stored in each police and fire station should be equal to the number of members of the station's Rescue Squads.

It will be advisable to have three times as many collapsible cots as stretchers and two blankets for every stretcher and cot. This equipment should be transported by the truck carrying the Rescue Squad to the site of the Casualty Station or First Aid Post.

**G. Records.**—Identification tags should be affixed to the injured by the Rescue Squad or else immediately upon arrival at the Casualty Station or First Aid Post. A duplicate record should be kept in a book which should be standard equipment of each medical emergency team. The record should include the name or other identification, address, person to be notified, diagnosis, first aid administered, morphine if given, and disposition. A form approved by the Medical Division of the Office of Civilian Defense will be found in a supplementary memorandum on equipment. One nurse or nurses' aide should be assigned the responsibility for these records. The forehead of tourniquet cases and of patients urgently requiring priority attention should be

marked *TK* or *U*, respectively, with a red crayon skin pencil, or lipstick.

**H. Drills.**—It is recommended that drills be called at each hospital once a month by the Chief of the professional staff. A record of each drill should be kept by him, which will show the time required for complete mobilization of a squad at the designated point of departure and the condition of equipment and transportation.

It is also recommended that field drills be called unexpectedly by the local Director of Civilian Defense at least every 3 months for each hospital. Each field drill might appropriately include one or more Rescue Squads of the police, fire, or other municipal department, who will assist the Emergency Medical Squads in setting up Casualty Stations at designated sites. The official in command at the drills should inspect the clothing, equipment, and transportation of all participating units and render a report to the Chief of Emergency Medical Service and to the local Director of Civilian Defense upon the promptness and efficiency of each unit. The larger field drills might include the Canteen and other Emergency Relief Services of the Welfare Department or of the local chapter of the American Red Cross or other local agency.

#### IV. Base and Evacuation or Clearance Hospitals

In order to prepare for the release of hospital beds within the area for large numbers of casualties, the Chief of Emergency Medical Service should make an inventory of hospitals, convalescent homes, and other institutions within a radius of 50 or more miles, to which maternity services, children's wards, certain categories of the hospitalized sick, and convalescents could be transported. Provision should also be made for the assembly and storage of an adequate supply of hospital cots, mattresses, blankets, and other equipment which may be required to provide for emergency increase in bed capacity of voluntary and governmental hospitals. In the event of actual destruction of hospitals, it may become necessary to consider evacuating casualties to Base Hospitals and transforming hospitals near the scene into Evacuation or Casualty Clearance Hospitals.

Upon receiving the first emergency call, the hospital should order all members of its visiting staff by telephone or police radio call to report to the hospital and stand by for the care of the injured received from the Casualty Stations and First Aid Posts.

#### V. Augmentation of Nursing Services

In the face of the need for rapid expansion of nursing services for civilian defense, the number of available nurses is being depleted because of the requirements of the military forces and the public health and industrial hygiene services. An attempt is being made to compensate for this deficiency by the training of subsidiary hospital workers through the NYA, WPA, and other programs. The Office of Civilian Defense in collaboration with the American National Red Cross has revised the instruction curriculum for Volunteer Nurses' Aides, so as to provide for a period of intensive practical instruction in hospitals under the direction of a special instructor in charge of the training and use of Volunteer Nurses' Aides. Upon completion of this practical training, Volunteer Nurses' Aides will become eligible to assist nurses in wards and out-patient clinics of hospitals, or in visiting nurse, public health, industrial hygiene, and school health services. Volunteer Nurses' Aides are intended to supplement the work of the nurse, so that she may be able to serve a greater number of patients. It is recommended that the local Chief of Emergency Medical Service in collaboration with hospital executives and principals of schools of nursing reorganize and intensify the training and the use of Volunteer Nurses' Aides in appropriate hospitals

\*Rescue Squads consist of auxiliaries of the police or fire department, who are trained and equipped for clearance and demolition work. Although their function is to extricate the injured, they have also had training in first aid and in stretcher bearing so that each member can serve as the leader of a Stretcher Team. Their first aid services at the time of the disaster should be restricted solely to most urgent needs such as the arrest of profuse bleeding or the application of a leg splint. Their primary object should be to remove the injured as soon as possible from the scene of danger with the aid of Volunteer Stretcher Teams and get them to a First Aid Post or Casualty Station.

in accordance with the new schedule of the Office of Civilian Defense and the American National Red Cross.

### VI. First Aid

First aid instruction should be provided for as large a part of the general population as possible. The local Chief of Emergency Medical Service should, in collaboration with the local chapter of the American National Red Cross, provide training in first aid for at least 5 per cent of the personnel of all municipal departments and large business and industrial establishments. Upon completion of training, this 5 per cent should constitute the first aid corps of their municipal department, business, or factory group. The leaders of these corps should be encouraged to take the Instructor's Course of the American National Red Cross so that, when qualified, their services might be utilized for the extension of first aid instruction to all employees and to the general population of the community.

The First Aid Course for Civilian Defense prepared by the American National Red Cross in collaboration with the Office of Civilian Defense is recommended for first aid training. Instructors qualified by the Red Cross may give this training under the direction of the local chapter of the American Red Cross, the local health department, or any other voluntary or governmental agency.

An intensive course of practical training (five 2-hour lessons) has been prepared by the Medical Division of the Office of Civilian Defense and the American National Red Cross as supplementary instruction for members of Emergency Medical Field Units and for nursing auxiliaries and members of other Civilian Defense Units (police officers, firemen, and volunteer auxiliaries) who have had previous instruction in first aid. It is designed as a refresher course for the purpose of reviewing and practicing those first aid procedures which are most important in Civilian Defense.

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## BOOKS FOR LEISURE MOMENTS

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### MOUNTAIN MEDICINE

Lawrence Cardwell roamed through the job field in the United States for the greater portion of his forty-four years. For a part of this period he studied creative writing at the University of Southern California. He then purchased a ranch in the Arizona wilds. The result of his experiences is a most entertaining series of sketches. Printed by Caxton Press, Caldwell, Idaho, it is called "Mountain Medicine."

It has nothing to do with medicine. Perhaps the author intended to convey the idea that the work required in the Arizona mountains is so salubrious that doctors are not required; that the mountains serve as medicine or tonic. Be that as it may, his literary style will grip the reader whether he be an ardent city dweller who espouses Robert Hutchins' doctrine (to throw oneself on a couch at the first sign of a desire to do physical labor) or an inherent ruralist.

It is well written and excellent photographs picture the vast elegance of the author's acres. B. Y. G.

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### DICTATORS, DEMOCRACY, CHILDREN

In a dictator-ridden world the active inculcation of proper ideologies in the child will determine the future of democracies. That, in short, is the theme which motivated Justice Jacob Panken of New York City's Children's Court in writing "The Child Speaks" (Henry Holt & Co., New York). Addressed to America's parents because they have been responsible for the appearance of thousands of children before him, the author presents a powerful plea for better understanding of

the child, for parental guidance actuated by youth's expanding personal horizon.

The first part takes up the problem of the child in relation to society. He seeks to afford understanding of the motivation of the child, the search for personal approbation. If this can not be found in socially desirable activities it is sought in some other manner. It is this failure to develop a feeling of being wanted that results in the occasional gang leader of distinctly superior intellectual ability. Hero worship is an important part of a child's life; it is necessary that heroes who exemplify social virtues be made accessible to the child, either through reading or through intimate contact. It is in the failure to find such heroes that undesirable character traits may arise. The hero must be found; hence escape is sought in the fictional hero of movie, magazine or radio, the fast-moving villain. All of these results are documented in the book.

One chapter is titled "Blame the Parent, Not the Child." A few sentences are worth reprinting: "A pleasant home presided over by intelligent parents who are interested in what their children do, think and hope for, and who are helpful to them, is a guarantee of decent citizenship for the future. It is not fair to blame children for their misdeeds. In many instances adults individually are responsible for the misconduct of juveniles; adults collectively are responsible for other misconduct on the part of children."

The second part of the book includes the case histories of forty-five children brought before the court on charges of neglect or delinquency. A third of these are classified by the Justice as delinquency chargeable to parents; others as due to the influence of environment (parental) or the gang, economic disadvantages and failure of the school. Still others the Justice wisely classifies as due to thoughtless acts or to an unjust accusation.

The first part of the book constitutes a magnificent exposition of the emotional problem of the growing child. Parents everywhere should have the benefit of Justice Panken's studied thought on how parents make bad children, how parents might make good children, children who in turn would make an unending contribution to community and national welfare.

B. Y. G.

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### MEDICINE MARCHES ON

The New York Academy of Medicine has performed a signal service to the profession for the last five years. The profession should do no less than to insure that this splendid public activity goes on for an unending term. During these years the Academy sponsored a series of six lectures to the laity, each designed to interpret the progress of medicine in a single field. This does not involve the preparation of a thesis which carefully avoids polysyllabic words and technical terms. Rather, "it has required finding the significance and correlations of a great amount of scientific and historical data . . . (making them) uniquely valuable." That the public has appreciated them is evidenced by their increasing attendance.

The speakers in the present series, Myerson, Perring Long, Rezinkoff, Rivers, Richard Hutchings and the elder Jackson afford ample evidence of the scholarly authority of the individual lectures. Even the physician may learn from them. Through them he may derive a greater philosophic appreciation of the social significance of his life's work. Through them groups of physicians may become emboldened to organize similar series of lectures in their own communities. Each time this happens the laity will gain a broader appreciation of the scientific acumen of the medical profession and more of them will become attracted toward medicine as the healing art best designed to relieve them of suffering.

B. Y. G.

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

## ASSOCIATE EDITORS: COUNCILORS OF THE TEN COUNCILOR DISTRICTS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

- Chariton County Medical Society, December 2, 1940.
- Montgomery County Medical Society, December 2, 1940.
- Perry County Medical Society, December 14, 1940.
- Ste. Genevieve County Medical Society, December 17, 1940.
- Howard County Medical Society, January 2, 1941.
- Camden County Medical Society, January 7, 1941.
- Andrew County Medical Society, January 9, 1941.
- Benton County Medical Society, January 28, 1941.
- Clinton County Medical Society, February 6, 1941.
- Holt County Medical Society, February 8, 1941.
- Macon County Medical Society, February 15, 1941.
- Moniteau County Medical Society, February 15, 1941.
- Mercer County Medical Society, March 12, 1941.
- Dallas-Hickory-Polk County Medical Society, April 4, 1941.
- Miller County Medical Society, April 4, 1941.
- Morgan County Medical Society, April 5, 1941.
- Johnson County Medical Society, April 11, 1941.
- Webster County Medical Society, April 22, 1941.
- DeKalb County Medical Society, April 25, 1941.
- Carter-Shannon County Medical Society, May 1, 1941.
- Pulaski County Medical Society, May 24, 1941.
- Christian County Medical Society, June 12, 1941.
- St. Francois-Iron-Madison-Washington-Reynolds County Medical Society, July 9, 1941.

### EIGHTH COUNCILOR DISTRICT

W. WALLIS SMITH, SPRINGFIELD, COUNCILOR

#### Dallas-Hickory-Polk County Medical Society

The Dallas-Hickory-Polk County Medical Society met at Urbana for a dinner meeting on August 5. Those present were Drs. D. C. McCraw, J. F. Roberts and G. D. Smith, Bolivar; A. J. Stufflebam, Humansville; V. H. Greenwood and R. E. Harrell, Buffalo; Urban J. Busiek and E. A. Pickens, Springfield; T. D. Wrinkle, Halfway; L. A. Glasco, Urbana; A. S. Johnston, Wheatland. Several wives also attended.

Following dinner the program was presented in the yard.

Dr. E. A. Pickens, Springfield, spoke on "Urology in General Practice," illustrated with lantern slides. He discussed diagnosis and treatment of the common disorders of the urogenital tract.

Dr. Urban J. Busiek, Springfield, discussed "The Sulfonamide Drugs as Used in Pediatrics." He brought out the change in attitude of the profession toward these drugs since they were first introduced and pointed out the present method of use and indications.

R. E. HARRELL, M.D., Secretary.

### TENTH COUNCILOR DISTRICT

E. J. NIENSTEDT, SIKESTON, COUNCILOR

#### Scott County Medical Society

The Scott County Medical Society met at the Sikeston General Hospital, Sikeston, on September 10. Those present were Drs. H. V. Ashley, Cape Girardeau; E. J. Nienstedt, G. W. H. Presnell, M. G. Anderson, H. M. Kendig and E. A. Belden, Sikeston; J. A. Cline, Oran; E. E. Jones, Lilbourn; A. E. Lee, Illinois; J. P. Brandon, Essex; H. S. Miller, Dexter.

Five reels of films on obstetrics were shown and a round table discussion was led by Dr. H. V. Ashley, Cape Girardeau.

Refreshments were served by the nurses at the hospital.

The next meeting will be October 15 and films on pediatrics will be shown.

W. O. FINNEY, M.D., Secretary.

### BOOK REVIEW

ESSENTIALS OF DERMATOLOGY. By Norman Tobias, M.D., Senior Instructor in Dermatology, St. Louis University; Assistant Dermatologist, Firmin Desloge and St. Mary's Hospitals; Visiting Dermatologist, St. Louis City Sanitarium and Isolation Hospital. Philadelphia, London, Montreal: J. B. Lippincott Company. 1941. Price \$4.75.

Tobias is known by his colleagues as a capable practitioner and teacher of dermatology. As a student of the respected and beloved Dr. Joseph Grindon, Sr., to whom he dedicated his book, Tobias could scarcely have escaped a scholarly bent. This text, designed for student use, is compact and straightforward. It is accurately written and well illustrated. Its argument is rarely controversial. Among the "general therapeutic suggestions," one notes with satisfaction, "Do not write a complicated prescription when a simple one will do." The book is an excellent small teaching manual, useful also to the general practitioner.

R. L. S., Jr.

# THE JOURNAL

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### WHAT IS THE MATTER WITH THE PATIENT WHO IS CHRONICALLY TIRED?

WALTER C. ALVAREZ, M.D.

ROCHESTER, MINN.

I am sure all physicians have many patients who complain that they are tired and all in, and insist that they be cured. A woman says, "What is the use of going on this way? I cannot have any fun; I am too tired at the end of the day to go anywhere." A school teacher is worn out long before the end of the term; she longs for her vacation when she will have a chance to get rested and she fears she will not be ready to start when school opens again in September.

What is wrong with these people? As a rule they have gone from one physician to another and from one clinic to another hoping someone will find an organic cause, some organ that can be sacrificed, some focus of infection or some gland that is functioning badly. Physicians examine them as carefully as possible but rarely find much of significance. Unfortunately, in desperation, physicians sometimes grasp at diagnostic straws and tell the woman perhaps that she has ptosis, gastritis, colitis, a little hypothyroidism, or her blood calcium is low or she needs "shots" of this and that.

Of course, every tired patient who has not been examined thoroughly should have at least one good examination because occasionally one will find some important disease like tuberculosis, diabetes, cancer or perhaps a little hyperthyroidism or hypothyroidism, hypertension or a failing heart or kidney. In the college student who begins to fail in health, one always must look for a smoldering appendix.

#### POSTINFECTIVE NEUROSIS

In many cases a long lasting fatigue state will follow a cold or a respiratory infection and often

Presented at the 84th Annual Session of the Missouri State Medical Association, St. Louis, April 28, 29, 30, 1941.

From the Division of Medicine, Mayo Clinic, Rochester, Minnesota.

I suspect that there has been a small amount of encephalitic injury due to the virus that caused the cold. I cannot prove this but I have many reasons for believing it. I know that in my own case I, who usually am full of energy and joy of life, for two or three weeks after a slight cold may feel tired and sleepy and may have to drag myself around. After influenza in 1918 I dragged myself around for nearly two years before all my old energy came back. In many such cases it may be, of course, that the cold or attack of influenza has such a prolonged effect because the patient is tired out from a long period of overwork or is constitutionally inadequate to stand up well to the strains of life.

#### NEUROSIS AND ARTHRITIS OR FIBROSITIS

Some of the patients I see with distressing feelings of fatigue have also much soreness of all their muscles associated perhaps with a certain amount of arthritis. I suspect that in these cases the brain may be influenced by the same virus that injured the joints and muscles and tendons, but I cannot prove it and I cannot be sure of it. All I can say is that time and again I have seen the association.

#### NERVOUS BREAKDOWNS

One of the commonest causes of extreme fatigue, of course, is a nervous breakdown. Now, how is a physician to know that the patient on the other side of the desk has a nervous breakdown? Certainly he should know of it before he starts treating the man or woman for this or that. I can tell how I go about finding out the status of the patient's nervous system. Often I suspect the presence of a nervous breakdown simply from looking at the patient or listening to the way in which the story is told. Then I will ask, especially if the person is a man, "How long is it since you could work?" And the answer will often be, "Not for some time." I then say, "You don't mean to say that you quit work because of that little discomfort or gas in your abdomen?" And the answer is that he was too tired and miserable, or he had lost his grip on life, his drive and his power to make decisions.

Formerly perhaps he was a crack salesman, but now he doubts if he could sell ice water to a man on the desert. Then I ask him if he can read and he will say, "No," that formerly he loved to read, but now it takes too much effort. In the first place he is not interested and in the next he cannot concentrate. He cannot remember the sentence he read a moment before and, as a result, he keeps reading the same paragraph over and over again without getting much out of it. I ask him if he can sit through a movie and generally he says, "No, after half an hour I get so nervous and restless I have to get up and go out." I ask him if he can sleep and usually he says, "No, I haven't been able to sleep well for months." Perhaps his wife speaks up and says he has been overly emotional and that he cries when anyone says a kind word to him. Perhaps he is irritable and wants to snap people's heads off. Sometimes such a man will be so panicky that he will get his wife to come to the office to take him home.

Now why has the patient a nervous breakdown? I immediately want to find out if he earned it through overwork and loss of sleep and worry or if it came suddenly without evident cause. In the latter case, I will be more worried about the man. I will be even more worried if on asking about his family I find that there has been insanity in one or more near relatives.

Often I see a woman who says that she is so terribly tired that it just hurts; it is such a painful sort of fatigue that she dreads to get up in the morning and face the world. Especially when several examinations by good clinicians have failed to reveal any disease. I ask one main question, "Who among your relatives has had such a depression that she had to enter a sanatorium?" Commonly the answer is, "Well, that was my mother (or my aunt, or sister)." Then I usually feel that I have enough explanation for the trouble. The distressing feelings of fatigue are similar to those of the depressed relative. If the patient before me had gotten more of the bad genes that her insane ancestor had to pass on, she too might have succumbed to melancholia; as it is, she is sane but painfully weary. Often these persons have indigestion and abdominal pain for which no local cause can be found.

Some of the persons born with a poor nervous heredity will get by well enough for years only to break down when overwhelmed by sorrow, overwork, worry or strain. Sometimes the breakdown is due to a severe infection like influenza or pneumonia, to a painful accident, to one or more serious operations or to an unhappy love affair.

In the presence of a nervous breakdown the patient and the family will be concerned mainly with two questions: Is a cure possible, and if so, how long will it be before it comes? Obviously, if the patient has a good nervous heredity, was well until he or she broke down under heavy strain and can now afford to take a rest, then the prognosis is

good and the return to health and work should be fairly prompt. Unfortunately, in many cases of this type the patient cannot take a rest; he is forced by economic necessity to go on working, perhaps at an uncongenial job in factory or office. Perhaps the patient is a widow with several children and no income except what she can earn each day. Or the woman may be extremely unhappy because of an unsatisfactory love affair or an unfortunate marriage which she cannot or will not dissolve.

In such cases the physician may not be able to help at all. These are the patients whom I think of as being "caught in a trap" from which neither they nor I can see any mode of escape. In such cases it seems to me foolish and wrong to fill the patient with medicines or to operate on them for something or other.

Many persons with a psychopathic inheritance crack up simply because they live so unwisely. Often they burn the candle at both ends and do not bother to get much sleep. Many fret and worry and wear themselves out. Many are chronic worriers and when they cannot find anything real to worry about they conjure something up. Others are always getting into some sort of jam with their relatives and friends, getting their feelings hurt or getting into an argument with someone, an argument which leaves them tense and upset. If they could only do their work without getting upset they might have enough energy with which to get by but, because they waste so much of their nervous energy on foolish worries and conflicts, the end of each day finds them worn out.

Many women who have nervous breakdowns are what I call perfectionists. They want everything around them to go just so. The house must be perfectly clean, the servants must behave perfectly, husband must come home exactly on time, the children must not track mud into the house and they must always be neat and clean and quiet. Worn out with trying to make the world run to suit them, these women finally go to pieces and get all sorts of pains and discomforts.

#### CONSTITUTIONAL INADEQUACY

Probably the commonest cause of chronic fatigue is constitutional inadequacy. People with this common disease sometimes are well built and well nourished, but nevertheless they have no stamina. They succumb easily to infections, and when anything happens to them, like an accident or infection or operation, they are likely to be knocked out for weeks or months or even years. Many are hypersensitive, many are somewhat psychopathic and many are overly fearful of disease. Many have poor pelvic organs and many are always ailing. Unfortunately there is no way of making these people over into normal husky persons and all physicians can do is to teach them to live within their means of strength. One must not operate on them if it possibly can be avoided and one must avoid diagnosing localized organic dis-

ease. One must learn to recognize these people, not because of negative laboratory and roentgenologic reports, but because of the way they look and behave and the way in which they tell their story.

Incidentally, if there is one word I would like to emphasize, it is that in these days of laboratory made diagnoses, there is a tremendous need for a return to the old methods of diagnosis based on observation with eyes and fingers and ears. There is great need also for a well taken history and a good knowledge of syndromes. A good physician should recognize a neurosis exactly as a good pediatrician recognizes whooping cough, not because the laboratory reports indicate whooping cough but because the physician knows whooping cough the minute he hears the child cough and whoop and sees it vomit.

#### CEREBRAL THROMBOSIS

In older persons who suddenly fail in health, one should think always of the possibility that there has been a small cerebral thrombosis. This is a common lesion which in my experience is seldom diagnosed until after the patient has had one or more typical strokes with involvement of arm or leg or speech center. In my youth I often watched these patients die by inches; I did not know what was the matter, and my colleagues did not seem to either. It often was thought the trouble was in the heart, but it was not. The patient often came in with what he called stomach trouble. Why? Because, suddenly, at a certain minute of a certain day there came a distress in the abdomen. Perhaps the patient was dizzy and vomited and for an hour or two was confused. The thing that always impresses me in these cases and makes the diagnosis for me is the suddenness of the onset. Highly diagnostic also, when it is present, is the big change in the patient's character.

Usually the diagnosis of a small cerebral thrombosis can be made only by taking a detailed history. For instance, one day I saw a sweet little old lady of 65 who for six weeks had been treated for indigestion. The history as it had been prepared for me showed that she had a crampy epigastric pain which came the minute she ate. Several diets had been tried but none had done any good. As is my usual custom, I asked her if the drinking of water brought the pain and she said it did; water was just as bad for her as was food. If only her previous physicians had remembered to ask this question they could have seen the hopelessness of trying diets and could have saved themselves much trouble. I next asked her if she ever had had a good stomach and she said she had had a perfect one until six weeks before. Naturally I thought first that she might have a cancer of the stomach, but then I asked her if she could remember what time of day the symptoms first came. Her husband answered, "Yes, the trouble came on July 17 at about 7:30 in the morning." I asked him to tell me exactly what happened and he said, "She was

getting my breakfast and I was reading the paper. All of a sudden she sat down and began to ask me over and over again, 'What happened? What happened?' She was evidently confused and upset. Later when she tried to eat she got this pain." I asked the man if his wife was any different temperamentally from what she had been before and he said, "Yes, she is an entirely different woman. Before this thing happened she was mentally wide awake, interested in everything and everybody, crazy about her children and grandchildren and devoted to many friends. Since the upset she has not even asked about her children, she does not want to see her friends and she is not interested in her church or club or anything. She used to be much in love with me and now she is indifferent. In addition she is forgetful and even childish."

It is highly important that physicians recognize these small strokes. When, as sometimes happens, they take away all of the patient's joy in life, one can warn the family that the outlook for recovery is bad. Once he has lost it, I have never seen one of these persons get back the old joy in life. I feel, therefore, that the family should be exhorted not to keep annoying these patients by telling them to snap out of it. They cannot snap out; the brain is irreparably injured.

Some physicians may ask, "But why were the presenting symptoms in the abdomen?" I am sure that in these cases the thrombotic injury to the brain affects the vagus centers and a storm goes down into the abdomen much as it goes down in cases of seasickness, migraine, Ménière's disease or brain tumor.

Sometimes these little strokes do peculiar things. I remember an eminent man who woke one morning with most of his memory gone. Otherwise he was well. A year later the next little stroke anesthetized one side of his face. An occasional patient will have all the symptoms of a severe stroke but will be up and about the next day apparently none the worse for it. Evidently his trouble was due to spasm in an artery. It must be remembered that many of these people are without hypertension or signs of arteriosclerosis. Furthermore, the disease tends to affect women more than men. Actually, one of the commonest ways of dying is to have the brain destroyed little by little by these small shut-offs of circulation which are due to cerebral arteriosclerosis. All physicians should get to know the syndrome well.

#### MILD INSANITY

A few of the patients who come in complaining bitterly of weakness and fatigue are really mildly insane. Unfortunately a physician often fails to recognize insanity when he sees it because he was not given a good course on the subject when he was in college. Insanity is one of the most common diseases. One child in every nineteen born in this country some day is going to be committed to a public institution for the nervously defective.

## SUMMARY

By all means give the tired person at least one good overhauling, but also keep a sharp lookout for those common diseases, overwork neurosis, postinfective neurosis, nervous breakdown, constitutional inadequacy, equivalents of insanity, actual insanity and cerebral arteriosclerosis. Physicians should learn to recognize these syndromes at a glance.

Mayo Clinic.

## TREATMENT OF CHRONIC ARTHRITIS

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Arthritis is simply a name for a large group of conditions of different etiologies. It is impossible to treat arthritis scientifically without having an accurate idea of the kind of arthritis with which one is dealing; and that means one must know the etiology if possible. Unfortunately, this goal is not always attainable.

First of all, one must be careful not to call every pain in a joint "arthritis." In the clinic I see a good many cases of pain in a joint, sometimes with swelling, which are due to mechanical conditions. If such a case falls into the hands of a busy practitioner, he may call it arthritis and proceed to treat it as such. One of the first things to do with a joint ailment is to have a roentgen ray.

Based on the etiologic factor, the treatment differs for each type of case. There is sulfonamide therapy, treatment with vaccines, the gold treatment and others, depending on the type of arthritis.

## SPECIFIC FORMS OF INFECTIOUS ARTHRITIS

Gonorrheal arthritis is perhaps the most important of the specific infectious forms. It is amenable to treatment with sulfanilamide and sulfapyridine, which should be given in large doses and at times supplemented by fever therapy. But whatever is done, in gonococcus cases do not temporize. These gonococcus cases have to be handled quickly before permanent damage is done to the joints.

## OSTEO-ARTHRITIS

Osteo-arthritis is one of the commonest types of arthritis the physician has to face, and as the population grows older there will be more and more of it. Remember that osteo-arthritis is not really a disease, in one sense of the word, because it rarely appears except in elderly persons. In old people, the cartilage becomes thin, the bones rub against each other and spurs form around the joint margins. The first thing I want to stress in the treatment of osteo-arthritis is rest; not necessarily rest in bed, but plenty of rest just the same. Physio-

therapy has one of its most important places in the treatment of osteo-arthritis, regardless of location. In the hands, the paraffine pack is used three or four times a week, and diathermy and the short wave are used on the knees and back.

Patients get osteo-arthritis from physical strain. Strain may come from overweight, pulling on the back and putting extra strain on the knees, or it may come from structural abnormalities. The important thing is to find the cause of the strain and get rid of it. If the patient is overweight, he should be put on a low calorie diet or given thyroid medication. Some respond satisfactorily to iodides and they should be tried, at least for a short time.

Osteo-arthritis of the hip is one of the most painful of joint conditions. Operation is not advised while the patient can get about in comparative comfort, or while he preserves a certain amount of function in the joint. I had a patient who came from Alaska, a large man in his 50's. He had been in a fight with a bear and apparently the bear got the best of it. When he came to me he complained of a pain in his right hip and roentgenogram showed osteo-arthritis of that joint. He came all the way to New York with the idea of having his hip operated upon, but after consultation, and since the pain was not severe, I advised him to go back and change his occupation, and to lead a sedentary life in the hope that the joint would be less painful and he might be able to avoid an operation.

One form of treatment often resorted to in these patients is deep roentgen ray therapy. It often does give temporary relief, but on the whole I have not been impressed with deep roentgen ray in the treatment of any form of chronic arthritis.

## GOUT

I want first to say a word about the acute cases of gout. I will mention the chronic form later. In the acute attacks, I give colchicine,  $\frac{1}{100}$  grain, every two or three hours until the patient develops diarrhea. It usually produces diarrhea after eight or ten doses. Then the drug should be stopped. Usually the effect is good.

Chronic gouty arthritis is a different story. Never make a diagnosis of chronic gout in a patient unless he gives a history of repeated acute attacks. It is a condition that does not develop gradually. Gout is always acute in the beginning and the gouty patient always gives a story of acute attacks, not always in a toe, sometimes in the ankle or some other joint; but it always starts with acute attacks and then after ten to fifteen years, if the patient does not follow his diet, he may have chronic gout. Acute gout does not always develop into chronic gout. The reason is that most patients usually will follow the diet, give up alcohol and cooperate in every way.

Acute gout responds quickly to colchicine,  $\frac{1}{100}$  grain tablet, every three hours until diarrhea develops. The treatment of chronic gout is more difficult. Here one relies chiefly on a low purine diet,

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physiotherapy and the use of uric acid eliminants such as cinchophen, glycine and salicylates. One must reduce the blood uric acid to 3 mgs. per cent if possible. Diet, however, is the most important, also water drinking and the use of alkaline preparations.

#### RHEUMATOID ARTHRITIS

Rheumatoid arthritis is a common form of joint disease and the most difficult to treat. One can treat these patients in the home, in the hospital, in a sanatorium or in the office or outpatient clinic. The patients to be put in the hospital are those who have a good deal of pain and are really sick. They have considerable joint swelling, run a fever and have a leukocytosis, and before they can be treated in the office or clinic they have to have rest and intensive treatment in the hospital. They should be in the hospital for about six weeks as a rule. An attempt to induce a fever of not more than 102 or 103 F. with typhoid vaccine should be made. If a good fever response is obtained allow three or four days rest between treatments. At the same time in these patients with rheumatoid arthritis and painful, swollen joints, transfusions should be given. They have a good effect not only on the blood picture but on the patients themselves. I give a patient two or three transfusions of 500 cc. each. As soon as possible physical therapy is used and I try to get the patient into the warm pool so he will get exercise and the feeling of well-being that the pool produces. Two or three treatments a week are sufficient in most cases. If the patient cannot take the pool treatment, a certain amount of exercise is given him in bed, lying on the back and making movements, to prevent muscular weakness, preserve the use of the joints and prevent ankylosis.

I use vitamins of course, but I have never seen any miracles from the use of vitamins in rheumatoid arthritis. Concentrated vitamin D is supposed to be good but I still have to be shown that it has a specific effect on rheumatoid arthritis. I have seen several patients improve while taking it but it is expensive and I always use it with a certain amount of misgiving. However, when one has exhausted everything else, concentrated vitamin D is worth trying. It should be given in 50,000 unit doses three times a day. One may get gastrointestinal symptoms with large doses.

In the home, the treatment of rheumatoid arthritis is much the same, although not so satisfactory. One must have an attending nurse to help the patient since he has to stay in bed most of the time. The patients should have long rest periods every day and plenty of heat. With women patients who have housekeeping and the children on their minds, home treatment is not so desirable from the standpoint of rest.

The best sanatoriums are in the desert near Tucson, Arizona, or in Southern California. Some patients go to Florida and that is all right if the

weather is favorable. There is no doubt, however, but that dry air does have a beneficial effect on some patients; on the other hand, others come back without any benefit whatever.

The usual method of treating arthritis is in the office or clinic. The reason is obvious; most arthritic patients are poor. They are mostly from the low income group and they cannot afford to go to a hospital or sanatorium. Most of them, fortunately, can walk, even though it is with crutches, and they go for treatment once a week and take treatment at home in the meantime.

There was an interesting discussion a few months ago in Boston at the meeting of the American College of Physicians where a round table on arthritis was conducted. The whole discussion seemed to center around sanatorium care, and I pointed out that while I was glad to have patients receive sanatorium care, in my experience most arthritic patients in New York had to be given the treatment they could afford. One has to be practical and cannot say, "If you do not go to a hospital or sanatorium, we cannot treat you." One has to do the best he can without institutional care. When patients go to the office for treatment they should have a certain amount of physical therapy at home, and they have to have instruction on this matter. I usually have a physical culturist go to the house two or three times a week to give them exercises and massage.

Some of these rheumatoid patients are given vaccine but for the last few years I have treated them mostly with gold salts and occasionally given vaccine in between courses of gold. A word now about gold therapy because it is so much talked about today. I used the gold treatment for years, then became discouraged because of the reactions; then went back to gold when I learned more about it. Gold now can be used with a fair degree of safety although it must be admitted that it is dangerous. I often use sodium gold thiosulfate which contains about 40 per cent metallic gold. Sodium gold thiosulfate is given intravenously. Other popular forms of gold salts are sodium gold thiomalate (myochrysine), and auriothioglucose (solganal B). These two products are given intramuscularly. The drug is given in courses, a total of about 1 gram in each course. I start with 10 mgs., then 25, then 50, and if the patient tolerates 50, I attempt to go to 100 mgs. The treatment is continued, one injection a week, until the patient has been given a gram of gold. I have not given gold oftener than once a week for fear of accumulation in the system. It is excreted very slowly. One has to follow closely the blood and urine and watch the skin for any kind of eruption. It may produce a stomatitis or dermatitis. Dermatitis is not so bad unless it is an exfoliative dermatitis. There is no way of telling whether the treatment is going to be successful until one tries it. One consolation about gold therapy is that the joints do especially well in those patients who develop a skin rash. The

serious gold reaction, however, is not stomatitis or dermatitis but the bone marrow depressions. These may be severe and the fatalities with gold have been in patients who develop purpura, agranulocytosis or aplastic anemia. I have seen at least a hundred cases of dermatitis following gold treatment, but never have had a tragedy in the way of blood accidents. But they can happen just as with the sulfonamides. I think if one will make a blood count and a urinalysis once a month and a sedimentation test once in two months, he will be fairly safe.

Remember that gold therapy, although it seems to be of considerable aid in the treatment of rheumatoid arthritis, is a dangerous agent and even after one has had some experience with it, he may get into a great deal of trouble with toxic reactions. Remember that a certain number of patients relapse after a few months—I think about 40 per cent have relapses—and have to be treated again with gold. But while they may relapse, the symptoms are usually not as serious as in the first attack and after a few relapses about 50 per cent of the patients remain in good condition, and some who are greatly improved hold what they have gained.

If the patient is going to be benefited at all by gold therapy, he usually is after the first course. The European writers advise giving two courses of gold at least. However, I certainly would not give more than two courses if the patient showed no improvement by that time.

I have not sufficient time to say anything about the surgical treatment of rheumatoid arthritis. Sometimes surgery of the affected joints is of great value. I really am not qualified to speak of orthopedic measures, except to say that one always needs orthopedic help in treating rheumatoid arthritis.

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#### DRUG FOR HOOKWORM HAS HAZARDS

All patients who are treated with tetrachlorethylene, an effective drug for clearing the system of hookworms, even in doses smaller than are usual, should be hospitalized or otherwise kept under close surveillance, J. H. Sandground, D.Sc., Indianapolis, advises in *The Journal of the American Medical Association* for August 9. He reports two cases in which the patients went into a profound coma or sleep after taking the drug. However, he says that for want of a better drug, these cases should not discourage the use of tetrachlorethylene.

#### 92 AMERICAN DOCTORS HAVE QUALIFIED FOR SERVICE IN GREAT BRITAIN

A total of 230 applications, up to September 4, had been received by the American Red Cross from physicians wishing to enroll with the Royal Army Medical Corps in response to a British Red Cross request for American physicians, *The Journal of the American Medical Association* for September 13 reports.

"Of these," *The Journal* says, "138 had been found unqualified because of age, lack of citizenship or other similar reasons. Nine-two have been qualified and 42 have been given passports to Great Britain; the remaining 50 are in process."

## MODERN TREATMENT OF THE MENTALLY ILL

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Psychiatry is the last branch of medical science to become elevated to a scientific level in medical practice. This is largely because of a legacy of primitive fear, superstition and religious misconceptions concerning anything relating to mental illness.

It is only 200 years since the days of witchcraft and the concept that demoniacal possession, or mental illness, was the result of wrongdoing and punishment was a proper treatment. It was only 150 years ago that Pinel cast off the chains of the insane at Sal Pietrere and Tuke started his various reforms and unshackled mental patients in England. It is only 100 years ago that the first state hospitals were organized and the state assumed a responsibility in the care of the mentally unfit. Fifty years ago the first scientific approach toward psychologic factors as the cause of emotional disorders began. At that time Freud began his monumental contributions resulting in the development of the analytic school of psychotherapy.

At the turn of the 20th century, outside of a few psychiatrists, no practitioner in medicine had accepted the principle of the mental, emotional or psychogenic factor as a cause of the neuroses. The great movement of Christian Science and other cults flourished because of this apathy on the part of the medical profession.

Thirty years ago an important reform began through the foundation of the National Committee for Mental Hygiene. This movement has contributed much toward making the laity and medical profession conscious of the importance of research and common-sense approach toward the mental patient. Even as short a time as fifteen years ago there were few medical schools with adequate curricula in psychiatry. The students graduated with little or no understanding of psychopathology, psychobiology or scientific examination and treatment of the functional mental patient. Even today medical schools still are dominated by the concept of organic pathology as the cause of disease, attempting to explain emotional phenomena on the basis of bacterial or chemical disease, in spite of the fact that 50 per cent of patients seeking medical relief for their symptoms show no evidence of organic, structural or physical pathology. This large army of sufferers do not have diseases but are victims of emotional disorders caused by faulty adjustment or inability to meet successfully economic, social or personal life problems.

Of recent years, a tremendous change has come about in modern psychiatric treatment. Among principal factors responsible for this change is, (1) the mental hygiene movement. Educational

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propaganda to lay, medical and nursing groups and social service agencies has awakened great interest, particularly with reference to prevention of adult mental problems by early recognition in childhood of these potential disabilities. Philanthropic endowments for mental hygiene of youth have done much, especially in metropolitan centers, to lessen this load upon society. The gains from this source will become much more apparent as time goes on. (2) Leaders in the medical profession, emphasizing the need for psychiatric subjects in the medical school curricula and interesting medical students in psychiatry and psychiatric nursing, have produced more specialists trained in this field. There is still great need for better psychiatric teaching courses in most medical schools. (3) The exposure in the recent World War of extreme deficiencies on the part of the medical profession in understanding and handling neuropsychiatric problems has been a great stimulus to modern psychiatry. The 40,000 beds in U. S. Veterans' Hospitals, largely filled with neuropsychiatric patients, are a grim reminder of the extreme prevalence of social misfits. (4) Of late years more research investigations as to the cause of mental illness with a great variety of treatment procedures have stimulated general medical interest in psychiatry. Recent refinements of treatment by means of artificial fever therapy, vitamin therapy and pharmacologic shock therapy have given physicians something more tangible, approaching specific therapy, in the treatment of certain serious mental disorders for which formerly little could be done. (5) The latest and one of the most important movements has been to bring psychiatry into the general hospital. A large number of metropolitan hospitals have recognized the need for more adequate facilities for treating the mentally ill as well as the physically ill and are developing specialized departments within the general hospital to which early mental patients can be brought without the stigmata of commitment as insane or the necessity of being secreted away to a private sanitarium. This move is breaking down false concepts rapidly within the medical body and the nursing profession and is enabling psychiatrists to treat patients before they have become so fixed in their psychopathologic reactions that little hope exists for recovery. The nursing profession is finding the treatment of mental patients interesting and psychiatric nursing an important factor in prompt recovery.

The first psychosis to respond to a more or less specific treatment was dementia paralytica. Wagner Jauregg's fundamental contribution in 1918, in which he proved that artificial inoculation of malaria was curative to certain patients with this disease, awakened new interest in psychiatric treatment. Soon it was shown that other fever inducing agents would produce a similar effect; by 1929, with the observations of Whitney, Neymann, Osborne, Kettering, Simpson and others, fever be-

gan to be induced in the body by artificial means through physical appliances which gradually are eliminating the more empiric and hazardous methods until now from 60 to 75 per cent of patients suffering from early general paresis can be cured. Furthermore, with present knowledge of prevention and more adequate early fever-chemotherapy in the asymptomatic stage of neurosyphilis, the medical profession is in a position to prevent active neurosyphilis and thus lessen the incidence of parietic dementia.

Of late years better knowledge of malnutrition deficiency factors in mental disorders has improved the therapeutic results in both functional and emotional neuroses and psychoses as well as the toxic delirious states. Undernutrition has been a difficult problem in many cases. Nonshock doses of insulin, from 10 to 25 U. daily, largely overcome the feeding problem of patients and bring about a weight gain of from 3 to 4 pounds a week.

The discovery of the specific nicotinic acid for the relief of pellagrous symptoms has taught that many delirious confusional stupor states are in reality symptoms of pellagra. Patients may or may not show other evidence of the pellagrin; usually dermatitis or diarrhea are not present but the glossitis almost always is present. Aged patients with stupor and confusion often have arteriosclerotic changes leading one to think they are developing organic dementia, yet, they respond dramatically with full recovery within a few days on from 100 to 300 mg. of nicotinic acid daily.

Other deliria are known to be vitamin deficiency states: alcoholic addicts may have combinations of nicotinic acid and B<sub>1</sub> deficiency. Thiamin, 20 to 40 mg. daily, with correction of mineral imbalance along with insulin, 20 U. given every few hours, overcomes anorexia; these combined with nicotinic acid rapidly clear up many delirious states. It has been found that sedatives usually are contraindicated in delirious states and should be avoided. Many severe delirious reactions are caused by promiscuous bromide and barbitol medications, too often encouraged by the physician. The indiscriminate use of sedative drugs in any so-called nervous state should be condemned. They serve at best only for symptomatic relief and in no way are specific and do not reach the fundamental personality problem.

Acute alcoholic stupor or excitement states can be relieved promptly by the administration of subconvulsive intravenous injections of from 3 to 5 cc. of metrazol. Wherever possible one should direct therapy toward specific results and away from symptomatic relief.

Schizophrenia always has been and will continue to be the major psychiatric disability responsible for a large majority of chronic patients in state hospitals. Even in this disorder, however, new hope has been engendered through the introduction of various types of pharmacologic shock

treatment; first, by the contribution of Manfred Sakel with the use of insulin hypoglycemic shock and, later, by convulsive shock therapy introduced by Meduna. These two methods of treatment have some basic or fundamental factor responsible for inducing an abrupt change in the personality pattern of early schizophrenic patients, ridding them of their oddities of behavior and delusional trends and making them capable of more normal adjustment. It is probable that the fundamental factor is a change in brain metabolism. Whether or not these treatment methods are permanent only time can tell but, at least, they have improved a high percentage of these cases temporarily and have created great interest in further research along these lines.

The problem of manic depressive psychosis, the second largest disabling psychotic state, while having a tendency to spontaneous recovery, still has in the majority of cases an appalling economic expense with prolonged hospitalization and the ruin of many lives and results in a multitude of suicides. In 1937 I discovered that convulsive shock therapy would terminate severe depressive and manic states within a short time.

This has proved to be one of the most remarkable specific therapies of modern psychiatry. Ninety per cent of severe resistant depressions, especially the involutional melancholic and pre-senile depressive types, clear up within three or four weeks after six or eight convulsive shocks, either by metrazol or by electric shock convulsions. Because of the serious traumatic hazards (fracture complications), the modification by preliminary curare injection to soften the seizure should be used with either drug or electroshock seizures. Curare administration, by producing a transient generalized motor paresis, adequately prevents all fracture complications and with its use the scope of usefulness of the therapy is greatly enlarged. By increasing the safety of the therapy many depressed patients having organic complications such as hypertension, cardiac disease and diabetes now, can be treated successfully. Resistant manic excitement states also can be terminated promptly with convulsive shock therapy. From my experience I believe the electroshock therapy is preferable to metrazol as it eliminates intravenous injection, the patient has less fear and there is less post treatment discomfort, thus lessening the nursing problems.

With these newer treatment methods at its disposal the medical profession is in a position to bring about a high percentage of remissions in severe psychiatric disorders, whereas, a few years ago there was little in the way of tangible treatment to offer.

The largest group of psychiatric disabilities, those that rarely reach the stage of permanent institutional care, are the minor psychoses or the psychoneuroses, society's commonest illness. In

certain of the severer types, physiologic treatment methods may be indicated but this group of emotional disorders can be relieved only through adequate psychotherapy. The future practitioner of medicine necessarily will have to understand these people and learn to approach them scientifically. Otherwise, they never will be rescued from the hands of cultists or the overzealous surgeon or other forms of unscientific treatment procedures that do not reach the basic problem—that of the individual's inability to fit into a normally integrated life situation.

Psychotherapy begins with the first contact with the patient. The fundamental principle is establishing rapport, enlisting full cooperation of the patient with treatment. The factors essential in securing rapport are a kindly, sympathetic, understanding approach; a willingness to listen to the patient's complaints; an appreciation of the sensitive emotionally immature type of patient, the so-called neurotic; to believe in the reality of his symptoms, and to be non-critical and avoid accusing him of imagining his symptoms.

The procedure is carried out by enlisting the patient's cooperation, estimating his intellectual and emotional assets, evaluating the degree of personality disorder largely by detailed life history, then applying reeducative therapy according to the patient's intellectual level. Straight suggestive, persuasive and reassurance therapy with encouragement to face reality aids many patients. More detailed discussion of conflict material with aeration and desensitization leading to modifications of psychoanalytic technic, thus establishing new objective goals, better insight and utilization of personality assets to restore emotional self confidence and respect, is necessary in the majority of cases.

These procedures are carried out best in adequate psychiatric departments along with psychiatric nursing facilities such as occupational therapy and complete separation from family influences in order better to control panics and to teach patients to ignore minor complaints and to rely upon their own judgments. Many minor cases, however, are readjusted easily by office therapy if sufficient time and patience are taken. The more resistant cases, by a well directed course of psychotherapy and the aid of efficient psychiatrically trained nurses, can be restored to useful capacity within a few weeks time. Any other form of therapy is patchwork. Drug therapy, rest cures, removal of focal infection or any other approach directed toward treating the emotional problems at a physical level are not scientific and but little different from the quack or cultist program.

If these rambling remarks have left the idea that modern psychiatric therapy is often efficient and capable of alleviating mental illness then its purpose has been served.

107 South 17th Street.

## THE USE OF LABORATORY DATA IN CLINICAL MEDICINE

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The *Journal of the American Medical Association* for July 28, 1900, contains an article by Dr. C. N. B. Camac, then of New York, which portrays the organization, equipment and functions of clinical laboratories at the turn of the century. In 1900 clinical laboratories were evidently great curiosities for Camac went to the trouble of collecting and reproducing in his article photographs of the clinical laboratories of Professor von Jaksch at Prague, Professor Leyden at the Charité and Professor Ewald at the Augusta Spital in Berlin. Included also were photographs and descriptions of the laboratory of the Toronto General Hospital and of the Victoria Hospital for Sick Children, of the clinical and ward laboratories of the Johns Hopkins Hospital, of the ward laboratory of Bellevue Hospital and of the outpatient laboratory of the Massachusetts General Hospital. Reference is made also to the opening of the William Pepper Clinical Laboratory at Philadelphia in 1896.

Camac regarded the well equipped clinical laboratories then existing in a few of the more favored medical centers and institutions as places where the larger problems, worked out in the chemical, anatomic, physiologic and pathologic laboratories, were reduced to simple methods, applicable to the detection of disease *per vitam*, and where technical procedures were simplified further for use by the hospital or ward clinical laboratory at the bedside.

The few hospital and ward laboratories of that day presumably owed their existence to the benevolence and cooperation of hospital authorities. Of course, this benevolence and cooperation were not showered but were gotten after something of a struggle and more than a little persuasion and cajoling for there were many sound objections to laboratories. What were these objections? First, was there any need for a hospital or ward laboratory and were not such laboratories scientific luxuries? The second objection in Camac's list was that a laboratory required space. A third objection was that laboratories are expensive; it took as much as \$300 to fully equip a laboratory, the microscope alone costing from \$125 to \$150. Another objection was that laboratory tests occupied too much time which the busy intern could ill afford to spend. Hospital authorities also wanted to know whether there was not some danger of patients getting into the laboratory and drinking the poisonous reagents, and was not there a risk that members of the intern staff might walk off with the

apparatus? Besides, laboratories were a nuisance, it was so difficult to keep them clean.

Camac devotes several pages to an attempt to meet and dispel these objections and another page or two to emphasizing the advantages and utility of hospital and ward laboratories. The question of expense, he notes, is not insurmountable. Dr. Fritcher informed him that at the Johns Hopkins Hospital the cost of maintaining the laboratory was \$75 a year, while Dr. Cabot assured him that \$30 was all that was required for the maintenance of his laboratory at the Massachusetts General Hospital.

These details will suffice to refresh one's memory and to recall the time when there were no Wassermanns, Kolmers, Kahns, Klines or Eagles, no blood matching or pneumococcus typing and no blood chemistry, when medicine was medicine and not applied biochemistry, and when a surgeon did not have to worry about water and electrolyte balance, prothrombin and vitamin K.

For purposes of self-orientation on the subject of the present discussion, I selected a number of representative journals published in the United States and devoted, respectively, to medicine, surgery, pediatrics and obstetrics and gynecology. Included in this list were the *Journal of the American Medical Association*, *American Journal of the Medical Sciences*, *Annals of Surgery*, *American Journal of Obstetrics and Diseases of Women* (later the *American Journal of Obstetrics and Gynecology*), *Archives of Internal Medicine* and the *American Journal of Diseases of Children*. Also selected were two journals more regional in character, the *New England Journal of Medicine*, formerly the *Boston Medical and Surgical Journal*, and, in order to bring the subject a little closer to your own home, I also chose the *JOURNAL OF THE MISSOURI STATE MEDICAL ASSOCIATION*. In addition, the *Journal of Clinical Investigation* was included for reasons which will become apparent.

Five of these journals were in existence in 1900, three others were established by 1920, while the *Journal of Clinical Investigation* began publication in 1924.

The plan adopted was to review, with such exceptions as will be noted presently, all the articles published in these journals for the years 1900, 1920 and 1940 and to classify these articles into six groups according to the extent to which laboratory data were used. Articles containing no laboratory data or reference to laboratory work were counted in the group entitled "no laboratory data." A second group included all papers in which some reference was made to clinical pathologic examinations such as a blood count, urine or stool examination and blood chemistry. A third group included articles in which some prominence was given to gross and microscopic pathology. As might be expected there was overlapping between this and the preceding group since a considerable number of papers contained both types of data. Classifica-

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tion in such cases depended on the relative importance of the data presented. The fifth group included papers, for the most part, clinical in scope but based largely or exclusively on laboratory investigation. A number of papers utilizing specialized physical methods of measurements were classified in a sixth group. Roentgenology and electrocardiography were not considered specialized physical methods. A seventh group of papers, involving as a rule animal experimentation, were classified under the heading of "experimental studies."

#### THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

The wide scope of this journal is recognized generally. Selection of articles for publication in the *Journal of the American Medical Association* is usually on the basis of their general interest and probable value to the medical profession as a whole. Problems in public health, nutrition, medical economics and sociology occupy an important place beside such subjects as physical diagnosis, therapeutics and surgical technic which as a rule also depend little on clinical laboratory work.

This point has to be considered in evaluating the data outlined in table 1 and in comparing them

Table 1. *Journal of the American Medical Association*

Year	Volume	Number of Articles Reviewed	No Laboratory Data	Clinical Pathology	Gross and Microscopic Pathology	Emphasis on Laboratory Data or Procedures
			Per Cent	Per Cent	Per Cent	Per Cent
1900	34-35	452	73	4	10	13
1920	74-75	520	50	21	11	18
1940	114-115	523	41	31	14	14

with similar statistics for more specialized medical journals. The figures in table 1 are of interest in several respects. It will be noted that whereas the emphasis on gross and microscopic anatomy has remained approximately the same, the use of clinical pathologic data has increased considerably since 1900. The figures in the last column require explanation. Offhand, it would seem that the proportion of papers with emphasis on laboratory investigation has remained approximately unchanged, but, it should be noted that before the advent of the *Journal of Biological Chemistry*, the *Journal of Laboratory and Clinical Medicine*, the *American Journal of Clinical Pathology* and similar publications, laboratory procedures were frequently published elsewhere, including the *Journal of the American Medical Association*. Thus, a considerable proportion of the fifty-two papers in this category (13 per cent of the 452 reviewed) for 1900

were descriptions of laboratory tests. Relatively few of these papers were based on extensive laboratory investigation. This relation has since been reversed. In 1940, the seventy-three papers, (14 per cent of the 523 reviewed) represented in the last column (table 1) were for the most part based on extensive laboratory investigation and relatively few of these were concerned with the description of laboratory procedures.

Finally, it may be noted that for many years the *Journal of the American Medical Association* through its editorials has brought to the notice of its readers important advances in physiology, bacteriology, nutrition, biochemistry, immunology and other laboratory sciences. The editorials are not included in the classification in table 1.

#### AMERICAN JOURNAL OF THE MEDICAL SCIENCES; ARCHIVES OF INTERNAL MEDICINE

In the *American Journal of the Medical Sciences* for 1900, more than half the papers had some reference to laboratory procedures. The data in table 2 reflect a moderate increase in the applica-

Table 2. *American Journal of the Medical Sciences*

Year	Volume	Number of Articles Reviewed	No Laboratory Data	Clinical Pathology	Gross and Microscopic Pathology	Emphasis on Laboratory Data or Procedures	Experimental Studies
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
1900	119-120	85	45	25	12	15	3
1920	159-160	138	35	30	10	19	6
1940	199-200	182	16	33	7	29	15

tion of clinical pathology and marked increases in the proportion of papers based either on laboratory data or on purely experimental studies. On the other hand, there was somewhat less emphasis on gross and microscopic pathology in the papers published in this journal in 1940 than existed either in 1920 or 1900.

This decline in interest is not general for in other journals such as the *Archives of Internal Medicine* (table 3) gross and microscopic anatomy occupied

Table 3. *Archives of Internal Medicine*

Year	Volume	Number of Articles Reviewed	No Laboratory Data	Clinical Pathology	Gross and Microscopic Pathology	Emphasis on Laboratory Data or Procedures	Unusual Physical Measurements and Methods	Experimental Studies
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
1920	25-26	93	15	19	9	37	10	10
1940	65-66	116	12	18	28	29	6	7

a much more prominent place in 1940 than in 1920. There were a few less contributions based primarily on laboratory data, but otherwise there was little difference between 1920 and 1940.

ANNALS OF SURGERY

The *Annals of Surgery* in 1920, as in 1900, was concerned chiefly with the advancement of surgical technic. Gross and microscopic pathology, as well as routine laboratory findings, naturally came in for some attention in case reports, but more fundamental interest in laboratory investigation was not evident until quite recently. The more recent changes are striking. On opening volume 111 for 1940 one finds the first article to be what is essentially a biochemical laboratory investigation of the vitamin C content in the blood and urine of surgical patients. Hospital patients show a definite depletion of vitamin C. Following operation there is a further drop of vitamin C in the blood plasma. The authors of the article are led to conclude that there is an increased need for this substance in the process of tissue repair and wound healing. Volume 112 for the same year (1940) contains a series of reports of investigations concerning the changes in plasma volume in acute intestinal obstruction, plasma prothrombin and the relation of hypoproteinemia to surgical problems. As shown in table 4,

Table 4. *Annals of Surgery*

Year	Volume	Number of Articles Reviewed	No Laboratory Data	Clinical Pathology	Gross and Microscopic Pathology	Emphasis on Laboratory Data or Procedures	Experimental Studies
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
1900	13- 32	89	72	15	8	5	
1920	71- 72	134	73	13	13	1	
1940	111-112	166	46	19	13	13	9

13 per cent of the articles are fundamentally clinical biochemical investigations, while an additional 9 per cent are based on animal experimentation.

OBSTETRICS AND GYNECOLOGY; PEDIATRICS

A review of the 334 articles in the *American Journal of Obstetrics and Gynecology* for 1940 (table 5) discloses that 44 per cent of the papers were devoid of laboratory data. Nineteen per cent of the papers, or twice the percentage for 1920, had clinical laboratory findings and 11 per cent were substantially laboratory investigations. Emphasis on gross and microscopic pathology characterized 23 per cent of the papers, a proportion which has not changed significantly since 1900.

The distribution differs from that in pediatrics (table 6.) The application of laboratory procedures to the diagnosis and treatment of diseases of children, as judged by reviewing one of the jour-

Table 5. *American Journal of Obstetrics and Diseases of Women (1900); American Journal of Obstetrics and Gynecology*

Year	Volume	Number of Articles Reviewed	No Laboratory Data	Clinical Pathology	Gross and Microscopic Pathology	Emphasis on Laboratory Data or Procedures	Unusual Physical Measurements and Methods	Experimental Studies
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
1900	16 17	120	74	6	20			
1920 21	1- 2	138	65	10	20	5		
1940	39-40	334	44	19	23	11	2	1

nals devoted to this specialty (*American Journal of Diseases of Children*), was at about the same high level in 1920 as in 1940. Compared to 1920, an increased interest in gross and microscopic pathology and a moderate increase in the number of laboratory investigations was evident in 1940.

JOURNAL OF CLINICAL INVESTIGATION

Of eighty-seven articles published in the *Journal of Clinical Investigation* for 1940, sixty-seven (87 per cent) were laboratory investigations; fifty-five of these were biochemical; twelve were devoted

Table 6. *American Journal of Diseases of Children*

Year	Volume	Number of Articles Reviewed	No Laboratory Data	Clinical Pathology	Gross and Microscopic Pathology	Emphasis on Laboratory Data or Procedures	Experimental Studies
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
1920	19 20	81	33	38	5	20	
1940	59-60	160	28	35	10	25	2

largely to fundamental studies in immunology and chemotherapy. Very few of the papers were limited to clinical pathologic data. Eleven researches (13 per cent) depended on specialized physical methods of measurement such as the optical plethysmograph or circular ballistocardiograph. Five papers (6 per cent) were based on animal experimentation. Volume 19 (1940) contained three times as many papers as volume 1 (1924-25). However from the standpoint of laboratory applications the scope of the journal has remained substantially unchanged (table 7).

NEW ENGLAND JOURNAL OF MEDICINE; JOURNAL OF THE MISSOURI STATE MEDICAL ASSOCIATION

These journals, although regional, cover, as does the *Journal of the American Medical Association*, a wide range of interests including historical and biographical sketches, essays on medical sociology

and economics, general discussions and reviews. A good deal of emphasis is placed on therapeutics. This distribution of interest is reflected in table 8. It will be noted that in 1900 the emphasis on clinical pathology was greater in the *Boston Medical*

Table 7. *Journal of Clinical Investigation*

Year	Volume	Number of Articles Reviewed	No Laboratory Data	Clinical Pathology	Emphasis on Laboratory Data or Procedures	Unusual Physical Measurements and Methods	Experimental Studies
			Per Cent	Per Cent	Per Cent	Per Cent	Per Cent
1924-25	1	29	3	3	84	10	
1940	19	87	2	3	76	13	6

and *Surgical Journal* than in the *Journal of the American Medical Association* (table 1), while in 1940 it was approximately the same. As has been noted in the statistics in table 8 are based on reviews of original articles only. Accordingly, the

Table 8. *Boston Medical and Surgical Journal; New England Journal of Medicine*

Year	Volume	Number of Articles Reviewed	No Laboratory Data	Clinical Pathology	Gross and Microscopic Pathology	Emphasis on Laboratory Data or Procedures
			Per Cent	Per Cent	Per Cent	Per Cent
1900	142	96	68	18	4	10
1920	182	79	62	25	5	8
1940	222	102	47	27	6	20

figures listed on "gross and microscopic pathology" do not include the "Case Records of the Massachusetts General Hospital," which form an invaluable part of each issue of the *New England Journal of Medicine* and enjoy a world-wide reputation.

The JOURNAL OF THE MISSOURI STATE MEDICAL

Table 9. *Journal of the Missouri State Medical Association*

Year	Volume	Number of Articles Reviewed	No Laboratory Data	Clinical Pathology	Gross and Microscopic Pathology	Emphasis on Laboratory Data or Procedures
			Per Cent	Per Cent	Per Cent	Per Cent
1920	17	80	71	17	8	4
1940	37	102	61	24	5	10

ASSOCIATION contains a large proportion of general articles and, therefore, for 1940 only 39 per cent of the original articles were in one way or another dependent on laboratory data (table 9). Clinical and gross and microscopic pathology received in 1940 about the same emphasis, proportionately, in the JOURNAL OF THE MISSOURI STATE MEDICAL ASSOCIATION as in the *New England Journal of Medicine*, but the percentage of papers based on more extensive laboratory investigation in the Missouri journal was only half of that in the *New England journal*.

VALUE AND LIMITATION OF LABORATORY DATA

These statistics are obviously incomplete and may or may not reflect the real growth of interest in the broader aspects of clinical and chemical pathology during the last four decades. The increase in hospital and private laboratories, the number of clinical pathologists, the growing number of trained laboratory workers and general observation, rather than the medical literature, may be better indices of the accruing importance of laboratory investigation in every day clinical practice. Independently of any statistics, one knows that today it is no longer necessary to stress the value of laboratory data. Every competent physician knows the importance of routine studies of urine and blood for all people, whether ill or apparently well. He knows that a report from the laboratory may provide the clue to a diagnosis, that often it is essential in establishing or confirming a diagnosis and that it may indicate the course and probable outcome in a given case. He knows also that the use of certain therapeutic agents, for example, insulin and sulfapyridine, involves a considerable hazard which may be avoided or greatly minimized by proper laboratory control.

The problem today, therefore, is not so much one of promoting enthusiasm for laboratory tests as to emphasize their limitations, to cultivate a critical attitude in the selection of tests, to stress the variability of laboratory findings and to point out the relative reliance which should be placed in particular instances upon laboratory versus clinical examination in diagnosis.

INTERPRETATION OF THE SEROLOGICAL REPORT

A few illustrations may serve to bring out these points a little more clearly. I shall consider first what is, from a clinical standpoint, one of the most valuable laboratory tests, the serodiagnosis of syphilis. Suppose the physician receives a report of a positive Wassermann or similar reaction. How should this be interpreted? Assuming the reliability of the laboratory and considering that the specificity of such tests is nearly 100 per cent, a positive reaction, if confirmed by clinical evidence, or in the absence of such evidence by repeated tests, preferably in more than one laboratory, and if possible by more than one standard procedure, is, with rare exceptions, proof of syphilis. The rare excep-

tions are the so-called "false positive reactions" said to occur in about half of nonsyphilitic patients with leprosy, in about one fifth of patients with malaria, to a less extent in other diseases and even in apparently normal individuals. The nonsyphilitic serologic reaction in human beings, and it will be noted that similar reactions are obtained with the sera of certain animals, has been designated as the "general biologic type of serologic reaction" in contradistinction to the "syphilitic type of serologic reaction" (Kahn). The two types of reaction now may be distinguished by the so-called verification test devised by Kahn.

Suppose the reaction is negative. How should it be interpreted? To answer this question, even in the briefest and most elementary form, the serologist will have to explain that the factor of "sensitivity" is involved. The most approved complement-fixation and flocculation tests, performed in the most reliable laboratories, will prove to be persistently negative in from 5 to 15 per cent of individuals with clinically active syphilis. This means that the sensitivity of serologic tests for syphilis is, at best, from 85 to 95 per cent. In many laboratories it is found to be much lower.

Why should a patient with syphilis give a negative serologic reaction? Kahn explains that, in a broad sense, there are three situations which may be responsible for such an occurrence: (1) when antibodies are not yet formed as in the early primary stage; (2) when there is an excess of spirochetal antigen in the circulation as in marked syphilitic flare-ups and possibly also in the early primary stage—such excess of antigen may cause the disappearance of antibody due to antigen-antibody union, (3) when spirochetal activity has become so quiescent as not to stimulate antibody production.

In secondary syphilis and in general paresis, the Wassermann and other serodiagnostic tests are almost invariably positive, although in rare instances a persistently negative reaction may be obtained (Moore).

The physician frequently is perplexed and annoyed by variable and fluctuating serologic reactions. He may discover in reviewing a given patient's chart that positive, weakly positive and negative reports occur without apparent rhyme or reason. The natural impulse is to blame the laboratory and he may be right; but then, again, he may be wrong. He fails to appreciate that the concentration of "reagin," the substance in serum responsible for complement-fixation and flocculation, varies within wide limits. It may be several hundred or even several thousand times more in one case than in another. Accordingly, although positive reactions are obtained uniformly when sufficient reagin is present and negative results when absent, variable results occur when the amount of reagin is very small and fluctuating.

That serologists have been diligent in their efforts to increase the reliability of the serodiagnosis of

syphilis is evident from the many tests which have been devised. In particular instances, real progress has been made in increasing sensitivity, or specificity, but the crux of the situation is indicated in the following remark by Kahn:

"Since it is best that human ingenuity be stimulated rather than disturbed, it is just as well to be faced with the problem of increasing numbers of 'new' serologic tests. Perhaps some day the perfect test will make its appearance. Even then, the problem of its performance by imperfect human hands will still remain."

The preceding discussion barely touches the subject; there is much more, but it should suffice to emphasize the importance of weighing the words "positive" and "negative" as applied to the serodiagnosis of syphilis.

#### INTERPRETATION OF THE GLUCOSE TOLERANCE TEST

A patient is found to have glycosuria and, therefore, a glucose tolerance test is performed. Assume that the urine collected during the test contains large amounts of glucose and that results of the blood analyses are as follows: fasting, 122; one half hour, 190; one hour, 238; two hours, 185; three hours, 90.

On the basis of these results renal glycosuria is excluded and a diagnosis of diabetes mellitus is made. However, this diagnosis may be in error for this type of curve may occur also in a non-diabetic individual during a period of acute fear and anxiety. If the test is repeated when the acute phase of the psychoneurosis has subsided, a normal curve will be obtained. But there exists also the possibility for variation in the diabetic patient. The sugar tolerance curve obtained in an untreated mild diabetic patient during an acute upper respiratory infection is usually quite different from that obtained in the absence of infection.

This illustrates that it is often hazardous to base a diagnosis either on the clinical observation alone or on the laboratory findings alone. The two go together.

#### PROPER TIMING

Timing of a test is often of crucial importance as is illustrated in the determination of serum amylase in cases of suspected pancreatitis. As Elman has shown, the marked increase in enzyme occurs at the height of the acute attack and may begin to subside within a few hours, returning to a normal level by the end of from twenty-four to forty-eight hours. No significant results can be expected, therefore, after the acute attack has subsided in the mild case, or, in the severe case after it has progressed to the stage of pancreatic necrosis.

Similar considerations of proper timing apply to many other procedures as, for example, the sugar tolerance test in cases of spontaneous hypoglycemia. Improper timing in drawing the blood specimens may be the principal reason for failure of the test.

## VARIABILITY AND OVERLAPPING OF DATA

The variability of data and the absence, frequently, of a definite line of demarcation between normal and pathologic states cannot be stressed too strongly. For example, about 12 to 13 per cent of apparently normal males and about 16 to 19 per cent of normal females between the ages of 40 and 60 have an acidity. What, then, is the probability that absence of gastric acidity in a given patient is significant? As an isolated observation, without relation to other laboratory and clinical data, the finding of an acidity can have little significance.

The volume and acidity of the gastric juice secreted under the stimulus of histamine tend to be high in patients with gastric and duodenal ulcers, but that such findings are not definitive is clear from the fact that similar findings occur also in from 30 to 40 per cent of apparently normal persons.

To take another example, a patient has a basal metabolic rate of between minus 15 and minus 20. What is the probability that this patient has myxedema? The answer of Boothby and associates, based on the comprehensive statistics of the Mayo Clinic, is about one to twenty. If the basal metabolism is minus 25, the probability is one to one, and if minus 35 it is almost certain to be myxedema. Similarly an elevation of the basal metabolism to plus 15 or even to plus 25 does not necessarily mean that the patient has hyperthyroidism.

The Aschheim-Zondek and the Friedman tests for pregnancy have a well-earned reputation for reliability. Yet positive tests may be obtained in nonpregnant states. The Friedman test, as performed by McCullagh and Cuyler, yielded positive reactions in the absence of chorionic tissue as, for example, in women with menopausal symptoms, in women with ovarian deficiency, in cases of testicular deficiency and testicular tumor, in patients with disease of the pituitary, adrenal cortex and hypothalamus and in neurological and other disorders. These findings again emphasize that the results of even the most reliable tests must be interpreted with some degree of reservation and in the light of an exhaustive study of the clinical status of the patient.

Such illustrations and numerous others which could be cited point to the need for the closest possible coordination of the clinical and laboratory aspects of disease, a need destined to become more and more urgent as new techniques for the study of disease are brought within the range of clinical application.

800 Avenue B.

## CARROTS RATE HIGH WITH NUTRITIONISTS

"Today's carrot," a bulletin of the United States Department of Agriculture says in a recent issue of *Hygeia, The Health Magazine*, "is about all anyone could ask of one vegetable. It tastes good, it is fashionably streamlined, it is attractive in color and it rates high with the nutritionists. . . ."

SURGICAL CARE OF FRESH  
TRAUMATIC WOUNDS

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This is an old and much talked about subject. The story of the fundamentals of wound healing is practically a religion for surgical idealists and a catechism for students in postgraduate surgery. It is assumed that every surgeon is familiar with these principles and that he regularly employs them in his surgical technic and an intricate discussion need not be given at this time. It is the purpose of this paper to start where the theory ends and talk about the everyday application of fundamentals in order to present the detailed development of a technic which has been found highly satisfactory and which can be carried out in any community hospital just as effectively as in a large, well staffed, teaching hospital.

The first premise is that a thorough débridement means the total excision of a wound. When one cuts away the skin edges of a soiled wound, clips off shreds of muscle and washes out particles of dirt, he has done a wound cleansing and not a débridement. Of course, many wounds will heal readily with just this sort of treatment and many superficial wounds will do well after wound irrigation alone; but unless one learns to master a thorough procedure which may be employed regularly and completed systematically, one will be denying patients their just due when the really serious injuries occur.

Large wounds and deep, dirty wounds are frightening. If one has not practiced a systematic and thorough excision of contaminated tissue until he is secretly sure of himself when he closes the wound, then he will be certain to end the procedure in a state of confusion with negligence in completing the job and with recontamination of the part which he thought had been well cared for.

The fact that the more simple wounds heal as well as they do from irrigation alone has furnished a wide appeal to everyone and the technic has been adopted by practically every institution teaching surgery. There is a feeling prevalent that it is the last word in the prophylactic care of wounds. It naturally follows that wound infections, which have developed in spite of these so-called wound débridements which were really nothing more than copious irrigations and the clipping away of a few grossly devitalized tags of tissue, have been attributed to such things as the severity of contamination, the size of the wounds and the nature of the organisms while the procedure itself has passed unchallenged. That infections in such injuries have been considered more or less inevitable

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is unjustifiable. The severity of the complications which may arise from an injury cannot be foretold from the size of the wound. Then why should one adopt double standards for the management of traumatic wounds? It is wrong for one to reason that a small wound should require much less care and attention than one which is larger. If one should continue in this trend of thought, he would soon arrive at the conclusion that a careful débridement is of little value in the larger wounds, too, on the basis that the chances for infection seem greater and nothing but conservative measures with drains and packs should be used. On second thought, this about does represent the usual concept for the treatment of fresh traumatic wounds. Such an attitude, whether fatalistic or lackadaisical, certainly does not encourage one to strive for improvement in his own technic or work for advancement of the standards set for the general care of such injuries.

Most standards, in the broad sense, are determined by common usage. This does not hold true for the standards which are advocated for the care of traumatic wounds. The one established in the medical literature represents a combination of all of the ideals which have been advanced for the aid of wound healing. Naturally, it is high. It should be authoritative because it is depended on for material in teaching graduate students and pointed to as a goal for one to attain. It is the desire of the Department of Surgery of the University to accept and keep this standard and pattern its technic to conform with its principles.

The care of wounds in first aid stations, in offices of men who are not trained in surgery, in hospital admitting rooms which are not under the jurisdiction of a surgical department, in institutions which do not have the facilities for adequate surgical care should not contribute toward another standard established by common usage; and yet, more wounds are being treated under these conditions than there are under skilled supervision. It is an unfortunate state of affairs when dictates from such practices prove more powerful than those which one's conscience tells him are best.

Even industrial injuries which become infected following inadequate first aid measures may receive greater consideration from the Industrial Commission and afford a higher compensation to the physician than similar injuries which have been given long, careful operations for débridement to enable the wounds to heal per primam without loss of function and with a minimum loss in working days.

When wounds heal per primam after débridement, the patient takes it as a matter of course and has little to say. When patients appear for reconstructive surgery for injuries which had been infected following incomplete first aid, one is likely to hear that an arm or a life was nearly lost but the skillful doctors pulled them through. One wonders where the deception lies.

It makes fruitful speculation but it illustrates that the care of traumatic wounds is subject to the same distortions as every other human act. The shortest, easiest and most uncertain course is sought regardless of the outcome; and any change which will make the job more difficult is objected to. Surgeons are now well on the way toward abandoning a little more of the care of wounds which they once were willing to give and are almost ready to believe that chemotherapy will substitute for extra work. It should be remembered that there is no substitute for good surgery and whatever is devised in the future can be only an adjunct to it.

If the effectiveness of standards for the care of fresh traumatic wounds are to be improved above the common examples of interpretation, then each surgeon must see to it that he effects the change in his own technic.

Graduate students must learn, understand and practice the use of good fundamentals in surgical technic. The concept of a thorough débridement must be made clear and its effectiveness in producing healing by first intention should be made known to physicians and patients alike.

Besides the objection to the expenditure of considerable time and energy in doing a thorough débridement of fresh traumatic wounds, another factor which has played a part in making the procedure unpopular has been the lack of detailed, step by step, description for doing the operation.

The method is especially applicable to small wounds which usually are treated by less certain measures. If one will practice his technic on these wounds and then rigidly and patiently follow the same plan for the larger ones, his results are certain to be gratifying. It is the Department's belief that the main difference between the little wound and the big one is the size and that if the big one can be excised as completely as the little one, there is no reason why the big one should not also heal by first intention.

A rigid technic must be followed to keep all of the members of the operative team from contaminating the clean tissues as the dissection progresses.

Wounds become recontaminated during débridement in several ways. Tissue juice and blood may run from the dirty surfaces to the clean ones. In the process of sponging, inexperienced assistants are likely to touch both areas at the same time and continue to use the soiled gauze on the clean wound. Instruments used on the soiled tissue often are laid in the operative field or are returned to the nurse who contaminates herself and the entire clean set-up.

For these reasons the following steps are taken:

1. Whenever possible a tourniquet is used to lessen the sponging and check the flow of contaminated juices from the dirty wound.
2. At all times a small, dry, gauze fluff is kept tucked in the dirty wound to absorb its fluids and

to remind the members of the team to stay away from it.

3. The edges of the dirty wound always are suspended with hemostats clipped to the skin. This makes it unlikely for additional instruments to become contaminated by its edges when used for the purpose of retracting clean tissues.

4. Should instruments become contaminated, they are not returned to the nurse but are placed in a separate basin for retirement.

5. The easiest way to maintain the sterility of the linens about a wound is to keep the sheets covered with extra towels. When a towel becomes soiled, it is removed and replaced with a fresh one. Thus the original drapes remain clean. If, instead, one attempts to cover a soiled spot on the drapes with a towel, the spot always remains in the field and may come to the surface by soaking through or by displacement of the protecting towel.

6. The fresh surfaces of the wound exposed by the dissection are kept covered constantly by moist flat gauze sponges, linen, towels, laparotomy pads or whatever material the operating room affords. These are changed frequently throughout the operation.

7. The lesion is never irrigated until the dirty wound has been excised completely. This, I believe, has been a valuable discovery. The primary purpose of an irrigation is to remove gross dirt, blood, bits of tissue, clots and liquefied fat. It will remove germs only so long as the germs are in these loose particles. Bacteria stick to cytoplasm and become imbedded at the time of injury so that they can be effectively removed only by cutting out all of the exposed surfaces of the wound.

If irrigation is used early, I believe that it is possible to spread contamination in a wound. What is even more likely to happen is the visible transformation of a dirty wound into one that looks fresh and clean. The surgeon then will take liberties with the wound and will not do a thorough job of excision. If the dirt is allowed to remain in the wound and the surgeon carefully includes all of it in his excision, his job is more likely to be a complete one.

The irrigation of a wound as a first aid measure is neither fair to the patient nor to the surgeon who is called to do the débridement. The chief evidence upon which he bases his decisions for operation will have been removed.

8. Two sets of instruments are used, one for the débridement and one for the wound closure. Before the closure the members of the team change gowns and gloves.

This concludes the main factors for the prevention of recontamination. The actual steps of the procedure may be outlined as follows:

1. All large wounds should receive treatment in the operating room, as should any wound involving tendon, nerve, bone, joint spaces or body cavity.

2. It is advisable to use a tourniquet at the time

of operation whenever possible and general anesthesia becomes necessary when a tourniquet is used.

3. If general anesthesia is being used, the patient is anesthetized as the surgeon scrubs his hands.

4. The surgeon then dresses in gown and gloves and personally attends to the skin cleansing about the wound.

5. Soap and water are used and a scrub brush, too, if necessary. No fluid is poured into the wound.

6. Hair is shaved away from the wound and a large area of skin is prepared in the usual manner. A segmental type of preparation is advised for extremities. The skin is washed with alcohol and ether.

7. The part is elevated for a few minutes and the tourniquet is applied. A sterile dry sponge is tucked into the wound with a sterile instrument.

8. The surgeon removes his gown and gloves and puts on gloves for draping.

9. Any good skin antiseptic is applied freely about the wound but is not allowed to run into it. The draping is completed.

10. The entire field is well protected with additional towels which may be removed if contamination occurs. The bare skin about the wound also is covered to the working incision.

11. Clamps are applied to the skin about the edges of the wound. These are held by the operator and his assistant for the purpose of traction and the control of the contaminated tissue.

12. An elliptical incision is made about the wound near its edge. The margin used is left to the discretion of the surgeon, as long as his knife does not slip into the dirty wound and as long as he excludes the devitalized skin by the incision.

13. The incision is carried into the subcutaneous fat until evidence of extravasated blood appears. This is always a good warning that one is approaching the contaminated area of the wound. One then directs the dissection away from the wound and parallel with the skin surface. The assistant retracts the clean skin edge with traction sutures or hooks.

14. As one progresses about the wound, the fresh surfaces are covered with moist flat gauze or linen.

15. Covering the clean wound, the gauze sponge fluff is removed from the dirty wound and discarded with the instrument. The cavity then is inspected with a curved clamp to determine the extent of the injury. A new fluff gauze sponge is placed in the dirty wound.

16. Having determined the amount of avulsion of skin and fat from the underlying muscles, one is able to direct his dissection away from the skin again and toward the muscle.

17. At this stage it is advisable to lengthen the clean incision in whatever direction may be necessary to facilitate exposure and access to the deeper tissues.

18. Encountering the areolar tissue along the

fascia of the muscle, this plane is followed back toward the dirty wound. If the fascia gets so thin that there is danger of its falling apart, one should include some of the muscle in the excision.

19. When a severed muscle belly is discovered, its soiled surface is snipped off in a sheet by means of scissors. A knife leaves a jagged edge and is likely to cause a tear into the dirty wound cavity.

20. This procedure is continued around the wound and as deeply as the injury extends. It is often possible to lift out the entire dirty wound in one piece. Sometimes traction will tear the friable sac which one is excising; but if he continues to cut in clean tissue, the incident will not be hazardous.

21. Sometimes the sac falls apart. If it does, discard what comes loose and apply fresh clamps to the remaining tissue. In a dry wound which has all of the clean surfaces protected one has surprisingly good control of the contaminated tissue. Even a forceps may be used to advantage if one does not apply it too close to his knife and if one always releases the dirty tissue so that it will fall into the contaminated wound.

22. In this same systematic manner one may remove areolar tissue coverings from vessels, nerves, tendon sheaths and periosteum in order to carry out the task of doing a complete débridement.

23. Open vessels are clamped and later ligated with very fine silk.

24. At the completion of the débridement, the wound is irrigated with physiologic salt solution.

25. Everyone changes gloves and the instrument tables are changed. The top towels are replaced with fresh ones.

26. The tourniquet is released and the wound again is irrigated. New bleeding points are clamped and ligated. The muscle is inspected for devitalized shreds.

27. Any necessary suturing of tendons or nerves should be done and the wound closed with silk.

28. Air and blood are expressed from the wound and a dry dressing is applied. If possible, the part is placed in the optimum position of rest and immobilized by a splint.

29. Prophylactic passive immunity is afforded by 1,500 units of antitetanus serum.

30. The wound is not dressed for six or seven days unless unexplained fever, pain or lymphadenitis should arise.

This procedure does require a great deal of time and patience. Large wounds will need from two to four hours of work. To some this will seem to be an alarming length of time to spend on one patient. However, every precaution to guard the patient's general good condition should be taken. A little extra time intentionally is spent on the operation to see if he can be spared much postoperative trouble in the form of prolonged morbidity, pain, impaired function, loss of work; and also to save for everyone time and money usually spent in dressings, hospital visits, physiotherapy and perhaps delayed secondary operations.

Even in the hands of the more inexperienced postgraduate students at the University of Cincinnati College of Medicine, a marked improvement in the general run of wounds in the dispensary following the use of this procedure has been noted. In the hands of the advanced postgraduate students it has been found that its practice actually has improved their technic for operating on clean cases.

This technic has been adopted for the treatment of traumatic wounds at the Cincinnati General Hospital. Experience with the method has led to the belief that it does not matter whether the patient is a business official or a day laborer, there is economy in the long run for everyone concerned if a sincere attempt to carry out thorough débridements is made.

Cincinnati General Hospital.

## TOXIC GOITER

### PRACTICAL LESSONS LEARNED FROM A FIFTEEN YEAR MORTALITY STUDY

ROBERT W. BARTLETT, M.D.

AND

WILLARD BARTLETT, JR., M.D.

ST. LOUIS

For the sake of the present survey approximately 1,500 consecutive cases of toxic goiter in our private practice are divided into two periods (1926-1930 and 1931-1940) for comparative analysis and all patients dying in the hospital before or after thyroidectomy have been studied in detail. We reported in 1936<sup>1</sup> a comparison of mortality figures for the five year periods 1926-1930 and 1931-1935 showing a reduction of approximately 50 per cent in operative mortality for the second period. This was attributed in the first place to the development by Willard Bartlett, Sr., of criteria for the estimation of operative risk<sup>2</sup> which was formulated in 1930 and, secondly, to our increasing reliance on the test of breath-holding ability.<sup>3</sup> The present study adds another five year period, 1936-1940, and all the cases from 1931-1940 logically can be considered together by contrast with those of 1926-1930, the number in the two periods being about the same and our methods of medical and surgical management having varied little during the years since 1930. That the postoperative mortality of 1.7 per cent for the second period remains nearly half of that in the first period is ample evidence of the value of the plan of estimation of risk which is based on the following criteria and their corresponding absolute contraindications. Operation is deferred temporarily in a patient exhibiting any of the following signs: (1) circulation (congestive failure), (2) nervous stability (acute thyrotoxic psychosis),

(3) nutrition (rapid, continued loss of weight), (4) excretion (diarrhea, vomiting, sweating), (5) basal metabolism (rising) and (6) ability to hold the breath.

Any patient exhibiting signs of congestive heart failure is an extremely bad risk, not only for thyroid but for any type of surgery. Likewise, one who either is in or who has been recently in a thyrotoxic psychosis is a serious risk because usually only the most toxic cases develop psychoses. The individual who under ideal hospital conditions of bed rest, high caloric diet, iodine and adequate sedation continues to lose weight at a rate approximating one half pound per day or in whom the basal metabolic rate is found upon repeated tests to be rising rather than falling is in the wrong phase of the cycle for surgery. We insist that patients be improving rather than getting worse at the time of operation. Diarrhea, vomiting and sweating while at rest are other signs of gross uncontrolled overstimulation. Space does not permit a discussion of the breath-holding test, the details of which can be found elsewhere.

Study of the records of patients dying postoperatively with varying degrees of thyrotoxic storm invariably discloses the fact that one has violated one or more of the absolute contraindications to operation. Of course, such patients should have been continued on medical treatment until fulfilling the minimum requirements for operation. As will be shown later, accidental deaths, such as from pulmonary embolism or cerebral mishaps, cannot be predicted beforehand and occur with any type of surgery.

Table 1. Total Hospital Deaths

	1926-1930		1931-1940	
Preoperative	15	40 per cent	16	57 per cent
Postoperative	23	60 per cent	12	43 per cent
Total	38	100 per cent	28	100 per cent

In table 1 it is seen that the preoperative deaths in the two periods remain numerically the same and are made up largely of individuals entering the hospital practically moribund and dying usually within forty-eight hours of cardiac decompensation or in thyroid crisis. If the number of such deaths for each period is compared with the respective number of operations performed, one finds a non-operative mortality of 2 per cent in each. The persistence of this percentage of patients who seek attention only when dying is a fair indication that the average severity of the disease as we see it is not decreasing and postoperative results may be interpreted in this light. Long-standing neglect by the patient, also sometimes by her physician, is invariably the precursor to this sad ending. The marked decrease both in the actual number and in the percentage of postoperative deaths in the second period indicates clearly the increased accuracy with which the operative risk is being estimated.

Table 2. Operations Resulting in Death

	1926-1930		1931-1940	
Subtotal (one stage)	14	61 per cent	8	67 per cent
First stage lobectomy	3	13 per cent	4	33 per cent
Second stage lobectomy	3	13 per cent	0	0
Ligation of pole	3	13 per cent	0	0
Total	23	100 per cent	12	100 per cent

It is interesting to note that authors in other sections of the United States report seeing far fewer toxic goiters each year since 1930 than formerly. This is probably explained by the fact that with improving hospital facilities and longer residencies an increasing number of qualified surgeons is being turned out. Then, too, some practitioners who formerly did not do so have in recent years been more and more willing to assume the responsibility for operating in toxic goiter and, finally, it is possible that the various means aimed at the prevention of goiter are taking effect.

Table 2 reveals the interesting finding that in the group of patients sick enough to require stage operations there was no death associated with the second stage in group two. This is accounted for by the fact that we have made it a strict rule not to perform the second lobectomy until the patient is in as good condition, according to our various methods of estimation, as he was for the first stage. Obviously, then, if he has survived the first operation there should be no trouble with the second, barring an accident. It may be stated as a generalization that the patient younger than 50 will be measurably safe for the second stage in from ten to twelve days after the first lobectomy while the one more than 50 usually will go home for from two to three months between operations since he recovers more slowly from the stress of the first operative attack.

We have performed no superior pole ligations since 1931 because of the conviction that the procedure has no therapeutic value<sup>4</sup> and is actually extremely dangerous under certain conditions. It now is well known that ligation of the superior poles does not decrease greatly the blood supply of the thyroid gland and so the improvement which in the past seemed to result from some of the ligations almost certainly was due to the additional weeks of bed rest, iodine and sedation which followed the ligation but preceded the thyroidectomy. Actually, ligation probably has killed many of the sickest goiter patients, most of whom eventually would have become satisfactory risks for thyroidectomy if continued on the medical regime for a sufficient length of time. We had a mortality of 7 per cent for ligation during the first period reported, practically double that of partial or subtotal thyroidectomy during the same time. Ligation should have no place as a therapeutic test of whether or not the patient will stand thyroidectomy since, as shown earlier, there are perfectly safe nonsurgical means of determining this.

Experience has shown conclusively that in those patients who remain relatively refractory to preparatory treatment or show any one of our "absolute contraindications" it is much safer in the long run to continue them for considerable periods of time on medical treatment rather than risk an operation, the outcome of which appears doubtful. For the benefits of those who take the attitude that if you do not proceed with the operation the patient may go progressively downhill and die, let me point out that during the last ten years we have lost only one patient thus deferred; also, that we have had such individuals on continuous medical regime for as long as fourteen months before they were in shape for measurably safe surgery. We are in complete agreement with others seeing a considerable number of goiter cases that once iodine is started in the preparatory treatment it should be continued without interruption until thyroidectomy has been performed, regardless of how long a period of time this may be. This has been our practice since 1931. If iodine is stopped, the patient may lose whatever gain he had made or even in extreme instances go into a fatal thyroid crisis.

Table 3. *Nature of Postoperative Deaths*

	1926-1930		1931-1940	
Pure crisis	8	35 per cent	3	25 per cent
Crisis plus complications	8	35 per cent	0	0
Nerve injury	2		2	17 per cent
Hemorrhage	2		0	0
Drugs	3		2	17 per cent
Abortion	1		0	0
Shock	4	17 per cent	0	0
Embolus	1	4 per cent	3	25 per cent
Septicemia	1	4 per cent	0	0
Congestive failure	1	4 per cent	1	8 per cent
Transfusion reaction	0	0	1	8 per cent
Total	23	100 per cent	12	100 per cent

Table 3 discloses the interesting fact that thyroid crisis was associated with 70 per cent of the postoperative deaths in the first period but with only 25 per cent in the second. If it is borne in mind that a severe postoperative reaction implies, in most instances, a failure preoperatively to have estimated correctly the patient's condition, it will be evident that our "criteria of operability" have made possible a high degree of accuracy in the estimation of the operative risk. Additional evidence of this is the fact that we have not had a single postoperative thyroid crisis since 1935. This table also reveals that the majority of deaths in the second period resulted from accidents beyond our control and it is noteworthy that such mishaps as pulmonary embolism occasionally will follow surgery anywhere in the body.

Table 4 shows that the mortality has been cut nearly in half, to 1.7 per cent, for the last ten year

Table 4. *Mortality*

	1926-1930	1931-1940
Operations	737	698
Postoperative deaths	23	12
Mortality	3.1 per cent	1.7 per cent

period. Of the twelve deaths occurring during that time eight of the patients were more than 50 years old and during the last five years all of those dying have been more than 50.

In conclusion, it seems pertinent to discuss briefly the types of goiter which should in our opinion be treated by thyroidectomy rather than by any other means. The first is the diffuse hyperplastic toxic variety, concerning the management of which there is little controversy anywhere. The second is the nodular goiter which we feel strongly should be removed, whether toxic or nontoxic, for the good reason that the combined danger of more than 50 per cent of them eventually becoming thyrotoxic with subsequent cardiac and nervous system damage plus a 4 per cent incidence of malignant degeneration in nodular goiters far outweighs the risk of a thyroidectomy mortality of less than 2 per cent.

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## SURGERY IN TUBERCULOSIS

C. J. MELLIES, M.D.

MOUNT VERNON, MO.

Rest is and always will be the one aim in the treatment of tuberculosis, regardless of how it is attained. Many methods have been and are being tried in an attempt to facilitate and increase the degree of immobility. Absolute bed rest is the least effective but still is the method of choice since it presents the least dangers, is more easily attained and does not require complicated apparatus or hospitalization. Unfortunately, its application is limited to patients who have less than moderate degree of disease or to those with progressive disease in which other forms of therapy temporarily are contraindicated. Occasionally, a far advanced patient, if given sufficient time on rest, ultimately will obtain a cure.

## PHRENICOTOMY

Phrenicotomy enhances the effectiveness of bed rest in that two diameters of the chest are involved. The diaphragmatic activity is nullified and the vital capacity cut down about 300 cc. and the thoracic capacity is decreased from 10 to 15 per cent, depending on the amount of pleural attachment and subsequent muscle atrophy of the diaphragm. Phrenicotomy is most efficient in the mixed proliferative-exudative disease and regressing exudative type. Cavitation should be less than three centimeters in diameter and have a thin wall, preferably with a parenchymal tissue surrounding it. Phrenicotomy should not be used for extreme apical cavi-

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tation since its efficiency decreases with the distance from the diaphragm. Permanent paralysis of the diaphragm should be limited to the few cases in which the temporary paralysis has effected an apparent cure and reactivation has occurred with a return of function; also, I believe, in all cases with basilar disease, or, as one occasionally sees, cases in which pneumothorax is ineffective because of combined apical and basilar attachments or synechia.

In far advanced tuberculosis, thoracoplasty frequently is contraindicated because of active generalized unilateral disease with or without contralateral diseases of a minor nature. A temporary phrenic resection in such case not only will speed up recovery but will protect the patient to some extent until more radical or permanent measures can be applied.

Phrenicectomy fortified by pneumoperitoneum frequently will reduce the thoracic content about 50 per cent or will displace the diaphragm upward to the third interspace anteriorly. It particularly is recommended when pneumoperitoneum is to be abandoned. The contraindications are relatively few, advanced age, progressive bilateral disease and apical cavitation, with or without pleural sclerosis or fibrosis.

As an adjunctant to other forms of therapy, phrenicotomy already has been mentioned. I want to emphasize that if, following phrenicotomy, the rate of recovery or the anticipated results do not occur, pneumothorax still can be attempted and established. Phrenicotomy will, in an obliterative pneumothorax, slow down the rate and time of re-expansion. The interval of refill usually will be increased in pneumothorax and, if given following intentional reexpansion, afford about another year of rest for the lung.

#### PNEUMOTHORAX

Pneumothorax, although not a part of this article, must be mentioned in passing because of the accident resulting from its use and cases in which pneumothorax has been established and proven unsuccessful become surgical problems. Prolonged or uncontrollable pleural effusions and empyema become thoracoplastic or thoracotomy subjects. The pleura, because of the irritation and fibrinous deposit, becomes thickened and the normal expansion of the lung is prevented. In some cases mild suction over a prolonged period will effect a re-expansion. In the balance of cases and in the empyema patients a total thoracoplasty is invariably the ultimate end therapy. In other patients pneumothorax is unsuccessful because of pulmonary adhesions or synechia. Only too often a negative sputum is secured but upon attempting re-expansion there is a reactivation of the disease, or the sputum again becomes positive and two or three years of the patient's life are wasted.

Pulmonary synechia not only will prevent a successful pneumothorax but are themselves con-

ducive to fluid formation and its accompanying evils. Many of these can be cut or dissected free from the chest wall successfully and thus permit an efficient collapse. I have not seen the success with the open method that is claimed for it and have used the closed method with definite success, both as to collapse and morbidity. I use the single puncture method and a high frequency cutting current for both the section and dissection, the disadvantage being that one can see in only one plane.

The more frequent complication is a temporary effusion. When one realizes that synechia are the result of pleural extension of tuberculosis and how frequently one actually sees tubercles in the adjacent pleura and within the synechia, one is surprised at the infrequency of empyema. I have in two definite instances cut and cauterized tubercle formations in order to obtain successful collapse and have not precipitated empyema. But this I do know—if in the progress of the dissection of a synechia, tubercles are encountered, it is safer to continue and liberate the synechia than to stop and permit the pneumothorax tension to be exerted at this dangerous point. Atelectasis evidently prevents reactivation. In my present series of more than 150 cases, two cavities were perforated, one when the patient jerked away from the current and the other occurred in the dissection of the synechia from the contact with the chest wall. The first patient has a bronchopleural fistula; the other has an empyema, but has a successful collapse, the sputum is negative and the basilar part of the lung is reexpanding.

Admission to the chest is usually through the third or fourth interspace along the inferior margin of the pectoralis muscle as the muscle offers a good pressure pad to cover the puncture hole in the intercostal space and affords better sealing qualities. A thorough survey of the thoracic space is made and each individual adhesion definitely located in its relationship to important underlying structures. Unfortunately, the area above the first rib is the favorite site of adhesions and also contains the more important vessels, the subclavian vessels and the brachial plexus. The second favorite site is the third interspace in the costal gutter and the fourth interspace in the costochondral area. Bands are encountered more often than cords and are fairly easy to separate early. Cords are, I believe, the result of attempting to stretch the band-like adhesion. The short heavy capstan or spool adhesion usually contains blood vessels and pulmonary tissue and, I have found, cavities. These must be dissected from the chest wall extrapleurally and, might I add, when they are in the vicinity of the first rib, one wishes he were removing the first rib instead. Occasionally one can cauterize the pleura around the base of the adhesion and, continuing pneumothorax, the adhesion will, at later operation, be found to have stretched enough to make simple section possible.

## PNEUMOLYSIS

The time for pneumolysis is a variable factor and must be adapted to the individual case. Evidence of synechia after the third month, with or without the demonstration of cavitation but a positive sputum, justifies a thorascopic examination and section of the adhesions. Attempts to stretch the adhesions usually result in pleural effusions or empyema and a spread to the contralateral lung.

From 30 to 40 per cent collapse is necessary to facilitate unhampered manipulation; the maximum collapse may be in the lower lobe. I prefer the adhesions to be at least 2 cm. long unless they taper from the lung surface. Apical caps, large cavities and inadequate separation contraindicate attempts at pneumolysis. Thick dense pleura contraindicates pneumolysis because it makes orientation in relation to the pulmonary structures impossible. Effusions can be removed at operation and in my series none has recurred after the adhesions were cut.

Open pneumolysis, extrapleural pneumothorax, plombage, and intrathoracic packs are all attempts to replace thoracoplasty, none of which gives the ultimate good results and all possess the same or greater danger, the indication frequently being that they are less shocking and can be performed earlier in the disease. Extrapleural pneumolysis and pneumothorax each has a greater morbidity and greater danger than limited thoracoplasty; the danger of infection is much greater and, above everything, usually must be followed by thoracoplasty to eliminate the cavity produced if it has not already re-expanded unintentionally with a reactivation of the underlying disease.

## THORACOPLASTY

In the last five years thoracoplasty has come from a final effort catch-all to a definite place with other standard forms of therapy. Whereas, formerly, one offered thoracoplasty or death after years of rest or unsuccessful phrenicotomy or pneumothorax, one now recommends it after a short trial at rest and less drastic therapy.

The indications might be summed up briefly as unimproved after rest therapy, unsuccessful phrenicotomy or pneumothorax, apical cavitation or destruction of one or more lobes. Contraindications may be summed up as diabetes mellitus or organic cardiac or renal disease, adolescence or extreme age, active disease in the contralateral lung, if in the lower fourth, and low vital capacity.

Diabetic patients with tuberculosis seem to develop a refraction to insulin and I have seen blood sugars of from 400 to 500 even with more than 200 U insulin daily. Infection seems to be almost impossible to escape.

All tuberculosis patients have a moderate myocardial damage, toxic in character, and some renal damage. Tuberculosis nephritis, unless far advanced, has not prevented successful thoracoplasty. I routinely operate on tuberculous patients who

would be refused surgery in a general hospital. I say this to dispel some of the ideas that a limited thoracoplasty is so extremely hazardous.

Oddly enough, those in the age group from 35 to 45 seem to tolerate the operation better than those in the younger groups. In the age group from 45 to 60 years, little difficulty has been encountered, but this may have been due to the fact that they had long-standing chronic disease. Morbidity and complications are seen more frequently in the younger age groups, particularly in those in the early twenties and late teen ages, although I have had no deaths in this group and the ultimate results have been satisfactory. It is also in this group that one gets more severe postural deformities and a longer period of postoperative convalescence is indicated, the reason being most probably that one finds the exudative type of tuberculosis more common in the younger age groups.

Another factor is the weight or the obesity of the patient. Patients who are healing gain weight, but gain in weight does not mean healing. The fat tuberculous patient is not the better operative risk. In fact, I would choose the so-called skinny patient for thoracoplasty. This I believe is even more true with men than with women.

The vital capacity is a relative factor and each patient has to be treated individually. Emphysema or extensive scarring in the contralateral lung, even with 3,000 vital capacity, contraindicates any extensive degree of thoracoplasty; while in a patient with a vital capacity of 1,200 and a completely atelectatic lung on the side to be operated upon, thoracoplasty will have little or no influence on the vital capacity and often one finds it improved following the initial stage of thoracoplasty.

I have used the posterior lateral muscle splitting approach as improved and advocated by Alexander, the first, second and about the posterior third of the third rib being removed at the first operation, the posterior stump being removed down to the articular surface and the rib not disarticulated.

Occasionally apicoplasty or extrapleural dissection of the apical portion of the lung is indicated because of extensive excavation. On the second stage another segment of the third rib is removed together with posterior segments of the next two or three ribs. In the anterior operation the incision in the male is direct or parasternal and in the female is lateral to the pectoralis muscle with a medical retraction of the muscle and breast. In this stage all the remaining portions of the first, second and third ribs and the cartilaginous portions of the fourth rib are removed. These three stages will give total collapse of the upper lobe and usually sufficient relaxation of the midlobe on the right. The various stages are spaced about three or four weeks apart, depending upon the recuperative power of the patient.

In the last three years 324 stages of thoracoplasty on 185 patients have been performed at the Sanatorium. More than 90 per cent of these patients

now have negative sputums and are economic assets. In 2 per cent of the cases no further surgery is possible. The others will require further surgery or reoperation. There were four postoperative deaths, one due to hemorrhage, one to pneumonia and two to cardiac failure (postmortem findings were negative except for some myocardial damage). Three patients died later from reactivated contralateral disease. One had a frank influenzal pneumonia. One death from cardiac failure resulted from chronic anoxemia. Another patient has a negative sputum but has a subscapular fistula. There has been but one postoperative death in the last two years and this was caused by a bronchopneumonia. Another patient died during the induction stage of anesthesia (nitrous oxide-oxygen). Wound infections are surprisingly rare but when they do occur are usually tuberculous.

The incidence of breakdown beneath thoracoplasty is extremely rare. There has been but one breakdown following thoracoplasty in this group, this being on the contralateral side and is since under control. The majority of these individuals have returned to their homes and are leading normal lives. Their occupations vary from truck driving, filling station operators and farmers to politicians; the women are doing their own housework, some have had children, others occupy clerical positions and similar occupations. The point is that they are not incapacitated or grossly handicapped.

From the cosmetic point of view, there is usually a fatty replacement within the depressed area and, when the patient is clothed, the depression rarely can be detected by the average layman. Scoliosis does not occur if the patient follows the designated routine. The shoulder girdle activity is not greatly affected unless the scapula is fixed intentionally within the chest wall so as to give greater posterior collapse.

Missouri State Sanatorium.

#### SPEECH DEFECTS OF CHILDREN

The causes for sound substitutions or omissions in words in the speech of young children may be both functional and organic, Ruth E. Beckey, Ph.D., Columbus, Ohio, says in a recent issue of *Hygeia, The Health Magazine*. Fortunately, she adds, many of the substitutions are due to faulty training, too much isolation, overstimulation, defective models for imitation and too much criticism by the parents. However, many of the organic defects of the speech apparatus may be repaired if the child is taken to the surgeon or orthodontist (dentist who specializes in prevention and correction of irregularities of the teeth) early enough. The teeth may need to be straightened before the child can say some of the sounds. If the front teeth have not yet appeared, and the "s" is defective, the best plan is to wait for the teeth to appear. The "s" may take care of itself. If hearing is suspected to be defective, an audiometer (device to test the power of hearing) check should be made to determine whether the child is hearing all of the different speech sounds accurately. The parents should also try to remove any unfavorable factors in the child's environment which may be impeding his progress, Dr. Beckey warns.

#### FEDERAL WARRANTS ARE ISSUED FOR THE BRINKLEYS

Under the heading, "Alas, Poor Yorrick! I Knew Him, Horatio," *The Journal of the American Medical Association* for October 11 says:

"On September 22 Mrs. John R. Brinkley was arrested in Kansas City on a fugitive warrant based on a Little Rock, Ark., charge of using the mails to defraud. A similar warrant for 'Dr.' John R. Brinkley was also carried by the deputy United States marshal, but the physician in attendance on 'Dr.' Brinkley said that his condition would not permit the warrant to be served. A telegram had been received from the district attorney at Little Rock, Ark., requesting the arrest of the Brinkleys on charges of sending fraudulent promotional materials through the mails. The physician of 'Dr.' Brinkley requested a delay because the leg of 'Dr.' Brinkley had been amputated in the Research Hospital in Kansas City on August 23 and it was reported that he 'suffered a severe heart attack September 2.' It is reported that Mrs. Brinkley stated the bond would be made returnable in Little Rock, where an answer would be made to the fraud charges. Incidentally, it was stated in the complaint that 'Dr.' Brinkley 'had treated some 16,000 persons at a fee of \$750 each or a total of \$12,000,000' and that the Brinkleys had represented 'to certain persons and to others generally' that 'Dr.' Brinkley 'had found a substance which would restore to normal sex vigor weak men and women' and that this and other claims alleged to have been made for the treatment 'were false and fraudulent and the United States mails were used to promote this fraud.' Another principal charge in the indictment was that the defendants 'did falsely pretend that John R. Brinkley was a great surgeon, scientist and physician, that he, while visiting medical centers in Europe, had found a real substance which would restore to normal sexual vigor sexually weak men and women.'"

#### ANOTHER CASE OF MENTAL DETERIORATION FROM CONTINUED USE OF BROMO-SELTZER

The case of a business man who suffered a progressive mental deterioration, which was present for eleven to fifteen years and culminated in a state of complete mental confusion, amnesia, disorientation and hallucinosis resulting from continuous self medication with large quantities of bromo-seltzer, is reported in *The Journal of the American Medical Association* for October 11 by Paul C. Bucy, M.D.; Thomas A. Weaver, M.D., and Edward H. Camp, M.D., Chicago. Discontinuance of the drug resulted in distinct improvement.

The authors point out that "numerous reports have called attention to the fact that severe psychosis, with mental deterioration, loss of memory, delirium and hallucinosis, is not uncommon as a result of intoxication with bromides. . . ."

The three Chicago physicians say that the wife of their patient stated "that she first became aware that he was taking bromo-seltzer on the day of their marriage in 1900. He had suffered from headaches of a migrainous character which occurred approximately once a month during most of his adult life, and he sought relief from these by an occasional dose of this proprietary preparation. In 1924, at the time of severe business reverses, he began taking bromo-seltzer daily and in ever increasing doses in order to relieve the nervous strain. It was not long until he frequently consumed a '50 cent' bottle a day. . . ."

His condition finally became so grave that hospitalization became necessary. About a month after admission to the hospital he had sufficiently improved so that he was discharged. However, there remained some memory defect.

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NOVEMBER, 1941

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## EDITORIALS

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### SOUTHERN MEDICAL ASSOCIATION

The Southern Medical Association will convene for its thirty-fifth annual session in St. Louis, November 10, 11, 12 and 13, with the St. Louis Medical Society as host. The association has held one other annual meeting in Missouri, in St. Louis in 1935. All scientific sessions, registration, scientific and technical exhibits will be in the Municipal Auditorium. Hotel headquarters will be in the Jefferson Hotel.

St. Louis physicians will give presentations at the general clinical sessions on Monday afternoon, November 10, and Tuesday morning, November 11, in medicine, surgery, obstetrics and gynecology, and eye, ear, nose and throat. A general clinical session will be held Tuesday afternoon. A few sections will convene Tuesday afternoon but most of the sections will convene on Wednesday and Thursday.

Dr. M. Pinson Neal, Columbia, will be installed as president of the association at a meeting on Tuesday evening in the Gold Room of the Jefferson Hotel. Dr. Paul H. Ringer, Asheville, North Carolina, president, will preside at the meeting. The president's reception and ball will follow this meeting.

A public meeting will be held Monday evening at the Jefferson Hotel. All fraternity reunions will be held Wednesday noon and alumni reunions on Wednesday evening.

The twenty-first annual golf tournament will be held at the Algonquin Country Club. The tournament will consist of one eighteen hole round of medal play and entrants are privileged to play any time from Monday, November 10, through Wednesday, November 12. The sixteenth annual trap shooting tournament will be held at the Creve Coeur Gun Club on Wednesday, November 12, at 1:00 p. m.

Concurrently with the Southern Medical Association, the American Public Health Association, the National Malaria Committee, the American

Society of Tropical Medicine and the American Academy of Tropical Medicine will hold sessions.

### CANCER WORK IN MISSOURI

The Missouri State Committee and the Women's Field Army of the American Society for the Control of Cancer recently issued an annual report, as of July 1, 1941. Dr. Louis H. Jorstad, St. Louis, is chairman of the Missouri State Committee and Mrs. David S. Long, Harrisonville, is state commander of the Women's Field Army.

During the last year, which was the fifth year of the Women's Field Army activities in Missouri, approximately 35,000 persons attended lectures and film showings. Programs were presented at 123 medical meetings and at 311 lay meetings. A film strip on the work of Madame Curie was shown forty times and the film "Choose to Live" was shown thirty-eight times. The 1941 edition of the film trailer of the Women's Field Army had approximately 250 showings in the theaters of the state.

Special emphasis was placed on bringing cancer control information to college and secondary school students and thirty-two lectures were presented to nineteen student bodies in nine towns. The audiences at these meetings totalled 5,325 persons.

There were 165,954 pieces of literature on cancer and cancer control distributed. Numerous telephone inquiries and eighty-five written requests for information were answered. Twenty-four exhibits were presented through the state with an estimated audience of 200,000. Thirty-five billboard displays were used and 925 posters and 500 car cards were displayed during the month of April. Newspaper publicity amounted to 583 articles of 3,293 inches.

### STATION HOSPITAL AT FORT LEONARD WOOD

The Station Hospital at Fort Leonard Wood, which has been receiving patients since May 3, 1941, has opened its staff meetings which are held at 6:30 p. m. on the first and third Thursdays of each month to all civilian physicians. Dinner is served in the Officers' Mess Hall at 5:30 p. m. for which the regular mess charge is made. On October 2 the subject of the program was "Thyroid Disease" and on November 6, at which meeting members of the Dallas-Hickory-Polk County Medical Society will be guests, the subject will be "Peptic Ulcer."

The Station Hospital is frame construction of the familiar army type with a 1,500 bed capacity. There are 105 buildings which are all connected by covered walks covering about fifty-three acres. Three types of ward buildings accommodating thirty-three, twenty-six and sixteen patients respectively, with administration buildings, officers

and nurses' quarters and medical detachment barracks, make up the physical plant of the hospital.

A large recreation building is being completed which is connected with the hospital by a covered walk. A well equipped library, game rooms, pianos and radios, as well as an assembly hall seating 500, are housed in this building which also houses the Red Cross office. The Red Cross personnel will direct all the recreational activities carried on in this building, including regular motion pictures for ambulatory patients.

The hospital is staffed by fifty-four medical, dental and medical administrative officers, of which the Commanding Officer and one other are Regular Army officers. With few exceptions the professional Reserve Officers are specialists who were well known in the larger cities of the Seventh Corps Area. The hospital has no interns. To date approximately 6,000 cases of all types and severity have been cared for with only one death, except persons involved in automobile or other accidents.

The nursing staff is composed of 124 graduate nurses, about ten of whom are Regular Army nurses. There are 144 civilian employees serving as dietitians, stenographers, physiotherapists, dental hygienists, pharmacists, cooks, butchers, carpenters, janitors, maids and mess and ward attendants.

The executive officer of the hospital, Donald J. Wilson, Major, Medical Corps, invites civilian physicians and surgeons to attend the staff meetings of the hospital.

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## NEWS NOTES

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Dr. John Zahorsky, St. Louis, was honored at a birthday dinner given by the St. Louis Pediatric Society on October 13.

Dr. Daniel L. Sexton, St. Louis, presented a talk on "The Syndrome of Anterior Pituitary Failure" at the meeting of the Trudeau Club of St. Louis on October 2.

Dr. Clyde P. Dyer, Webster Groves, was elected president of the Mississippi Valley Medical Editors' Association at the organization's first annual convention at Cedar Rapids, Iowa, October 1.

Drs. M. W. Pickard, E. H. Skinner, Thomas B. Hall and E. H. Hashinger, Kansas City, presented papers and exhibits at the meeting of the American Association of the History of Medicine in Kansas City, Kansas, on October 24 and 25.

Dr. Harriet S. Cory, St. Louis, General Director of the Missouri Social Hygiene Association, was a discussant on the program of the combined meeting

of the American Social Hygiene Association and the American Public Health Association in Atlantic City, October 12.

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Scientific exhibits again will be stressed at the 1942 Annual Session of the Missouri State Medical Association to be held in Kansas City, April 27, 28 and 29, 1942. Members wishing to present exhibits should contact Dr. Ralph R. Coffey, 1324 Professional Building, Kansas City, member of the Committee on Scientific Work in charge of scientific exhibits.

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The third Barnard Hospital Lecture, sponsored by the Barnard Free Skin and Cancer Hospital, St. Louis, will be presented by Dr. James B. Murphy, New York, before the St. Louis Medical Society on November 18. The subject will be "An Analysis of the Trends in Cancer Research." Dr. Murphy is from the Rockefeller Institute for Medical Research, is director of the Jane Coffin Childs Memorial Fund and a member of the Board of Directors of the National Advisory Cancer Council.

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Dr. Jesse E. Douglass, Webb City, was elected president of the Missouri Tuberculosis Association at the annual meeting of the association held in Kansas City, September 27. Other physicians elected to offices are Dr. E. E. Glenn, Springfield, vice president; Dr. Newell R. Ziegler, Columbia, recording secretary; Drs. R. H. Runde, Mount Vernon, James Stewart, Jefferson City, and H. L. Mantz, Kansas City, members of the executive committee.

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Two hundred chapters of the American Society for the Hard of Hearing observed National Hearing Week, October 19 to 25. The slogan for the week was "Defend Hearing." Industrial deafness was stressed because the Society feels that the need for protection against the injurious effects of noise is not appreciated adequately by either engineers or health officials and that defense industries will increase industrial deafness unless precautions are taken. There are two chapters of the Society in Missouri, the Kansas City League for the Hard of Hearing and the St. Louis League for the Hard of Hearing.

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The United States Civil Service Commission announces open competitive examinations for the positions of principal specialist in maternal and child health, \$5,600 a year; senior specialist in maternal and child health, \$4,600 a year; specialist in maternal and child health, \$3,800 a year, and associate specialist in maternal and child health, \$3,200 a year. Applicants will not be required to report for examination at any place but will be rated on the extent of their education, the extent

and quality of their experience relevant to the duties of the position applied for and on their fitness, such ratings being based upon competitors' sworn statements in their applications and upon corroborative evidence. Applications must be on file with the United States Civil Service Commission, Washington, D. C., not later than November 15, 1941.

Eighty-eight schools of nursing have been selected by the United States Public Health Service to receive Federal aid in training additional student nurses. This program will increase enrollment by 2,000. Surgeon General Thomas Parran has estimated a need for 50,000 student nurses this year and the Federal program will bring the total to approximately 42,000. The average yearly enrollment is slightly less than 40,000. Schools in Missouri to receive funds are the St. Mary's Hospital School of Nursing, Kansas City; the St. Louis City Hospital School of Nursing, the St. Louis University School of Nursing, Washington University School of Nursing, Jewish Hospital School of Nursing and the Homer G. Phillips School of Nursing, St. Louis.

The St. Louis Medical Society's annual pilgrimage to William Beaumont's grave in Bellefontaine Cemetery will be held on Tuesday, November 11 (Armistice Day) during the St. Louis meeting of the Southern Medical Association. A series of directing signs will be posted so that the Beaumont lot may be reached easily from the Willow entrance (middle gate) on Florissant Avenue, near Kingshighway. The brief exercises, during which Dr. Arno B. Luckhardt, Professor of Physiology at the University of Chicago, will make a short address, will begin at 12:15 p. m. The officers of the Southern Medical Association will join in honoring the memory of this great medical pioneer. Dr. R. B. Denny, Creve Coeur, President, will represent the Missouri State Medical Association.

In commemoration of the 400th anniversary of the death of Paracelsus (Theophrastus Bombast von Hohenheim, 1493-1541) there will be an exhibit of books, pictures and charts in the Library of the St. Louis Medical Society during the meeting of the Southern Medical Association. The library contains the largest collection of "Paracelsica" in the Western Hemisphere. The only known larger assemblage of similar works and articles is that of the late Professor Karl Sudhoff at Leipzig, Germany, the fate of which is not known. The principal part of the St. Louis exhibit was shown before the American Association of the History of Medicine at Atlantic City, May 4 to 6. Thereafter it was on display at the Johns Hopkins Institute of Medical History in Baltimore for several months. This is the first time that all of the more than 400 num-

bers of the Society's collection will be part of a display. All members are invited to inspect the collection.

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## MISCELLANY

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### PHYSICIANS IN CIVIL SERVICE

Because of an acute shortage of physicians available in the civil service, the United States Civil Service Commission has issued a pamphlet, "Opportunities for Young Physicians in Civil Service." During non-emergency periods approximately the same number of physicians are employed in the classified civil service as are commissioned in the Army, Navy and Public Health Service. Because of the present national emergency, large numbers of recent graduates of medical schools have been employed to provide medical care for the growing armed forces of the nation. This trend has brought about an acute shortage of physicians available for employment in the civil service. The pamphlet points out that medical functions carried on under civil service must continue during the national emergency. Excerpts from the pamphlet follow:

"Not all civil service physicians are employed in large government hospitals. A considerable number are engaged in the general practice of medicine, for example, those employed in the Indian Service of the Department of the Interior. This service, besides maintaining general hospitals and sanatoria ranging from fifty to two hundred fifty beds, has an active outpatient department connected with its hospitals and many of its physicians make home calls, make field trips, conduct school examinations and administer general public health measures among the Indians.

"Young physicians may be employed as far south as Panama and as far north as Alaska. Civilian physicians in the Canal Zone are appointed mainly for duty in dispensaries and for quarantine work. The dispensary work consists of general practice involving the attending of government employees and their families, crews and passengers of vessels. The work of quarantine physicians consists of quarantine and immigration inspection of crews and passengers on incoming vessels.

"Positions in the Coast and Geodetic Survey afford opportunity for physicians to spend some time at sea on Coast and Geodetic Survey vessels.

"Medical officers in the Food and Drug Administration are engaged in a critical review of the labelings of medicines in the light of their composition for the purpose of ascertaining whether or not the therapeutic representations are true or false as judged by a consensus of present day medical opinion.

"Also of increasing importance have been the medical functions of the Children's Bureau in the Department of Labor. The Child Hygiene Division of the Bureau carries on research and investigation involving fundamental technical medical study of the mental and physical condition of children in relation to heredity, environment, nutrition, and the efficacy of various methods of community health work.

"In the Public Health Service, there are, in addition to the commissioned force, medical officers who are appointed under provisions of the Civil Service Act and rules. The medical officers are appointed as Acting Assistant Surgeons and are usually detailed for local duty in the vicinity in which they reside. Activities of the Public Health Service include hospital and relief work, quarantine and immigration work, field investigations and epidemic control duty. The Public Health Service operates marine hospitals and relief stations throughout the United States. There are opportunities in the Public Health Service for Acting Assistant Surgeons to conduct investigations pertaining to industrial hygiene, goiter, anthrax, influenza, malaria, pellagra,

pneumonia, tuberculosis, typhoid fever, child hygiene and public health administration.

"The medical service of the Veterans Administration is comprised of regional offices, facilities and diagnostic centers. Facilities may be designed primarily for general service or for tuberculosis or neuropsychiatric service. Some have a combined service. In nine facilities centers have been created for special chest surgery. There are two diagnostic centers, one of them having one of the largest and most modern tumor clinics in the world. Three centers have clinics for thorough diagnosis and treatment of malignant growths."

### PLANS FOR REHABILITATION OF REJECTED DRAFTEES

In his press conference, October 10, President Roosevelt criticized the nation for permitting conditions which have left 50 per cent of its youth unfit mentally or physically for Army service and inaugurated a program to "salvage" 200,000 of the 1,000,000 youths who have been rejected.

Under the salvage program the federal government will pay medical costs for treatment by local physicians of approximately 200,000 registrants whom local draft boards certify as susceptible of rehabilitation for army service. The Army expects to accept virtually all of these 200,000 after they undergo treatment by family physicians or dentists at federal expense, Mr. Roosevelt said.

Describing the salvage program as only the initial objective, Mr. Roosevelt said that existence of conditions which permit so high a ratio of rejections is an indictment of America. He said he would launch a long-range program calling for cooperation of states, counties, cities, townships and individuals to remedy the conditions which are the underlying cause of the bad situation. He released statistics collected by Selective Service Headquarters showing that approximately 1,000,000 men have been disqualified for Army service because of physical, mental or educational conditions. This represents approximately 50 per cent of the total number of men examined. Mr. Roosevelt made it clear that he feared this ratio among men of draft age represented a fair index of the health conditions of all Americans.

The President read from a report presented by Brig. Gen. Lewis B. Hershey, Selective Service director, which declared that of the 1,000,000 rejected "about 200,000 can be completely rehabilitated and made available for general service in our armed forces. The remainder can be rehabilitated to perform only limited service or, because of mental, nervous, cardiovascular and pulmonary diseases and musculoskeletal defects are incapable of rehabilitation or even limited service and are therefore not being considered under the present rehabilitation program for Selective Service registrants," Hershey's report said.

"Our initial objective in this rehabilitation program will be the 200,000 registrants who can be completely rehabilitated and made available for general military service in the armed forces at a small cost and in a reasonably short time.

"Certain types of venereal diseases, operable hernias, deficiencies in vision and teeth, and other minor defects will be corrected in cases where the Army determines that the registrant will then be acceptable for general military service.

"The registrant will have the privilege of having the services performed by his family physician or dentist in his own community.

"The cost of this rehabilitation program will be borne by the federal government as a necessary part of our national defense program, and additional funds will be made available to the Selective Service System for this purpose."

Mr. Roosevelt was asked by what authority registrants could be compelled to undergo medical or dental treatment to prepare themselves physically for military service. He replied that when a registrant appears before an examining board he is under the jurisdiction of that board and can be directed to undergo such treatment. Conjecturing that a majority of such persons would be willing and eager to receive free treatment, Mr. Roosevelt said that in cases of recalcitrancy the registrant could be inducted into the Army, placed under Army orders and commanded to undergo treatment. The President disclosed that the Army also had presented an alternative program, which he rejected, calling for induction of all rehabilitable cases and their treatment in Army medical centers.

When costs of housing, food, clothing, Army pay and medical care in this program were considered, Mr. Roosevelt said it would involve expenditure of approximately \$500,000,000. The salvage program by local physicians and dentists which he has approved will cost far less than that, he said.

The President disclosed that plans already are well advanced for the salvaged program. In cases of heart and musculoskeletal diseases, as well as mental and nervous cases, persons considered by local boards as being susceptible to rehabilitation will be placed in a special selective service category. Remaining under orders of their selection boards, these men will be visited by traveling boards or "teams" of prominent specialists, who will examine them and recommend curable cases for immediate treatment at government cost.

The selective service report itemized as causes for rejection:

- Dental defects, 188,000 cases, 20.9 per cent.
- Defective eyes, 123,000 cases, 13.7 per cent.
- Cardiovascular diseases, 96,000 cases, 10.6 per cent.
- Musculoskeletal defects, 61,000 cases, 6.8 per cent.
- Venereal diseases, 57,000 cases, 6.3 per cent.
- Mental and nervous diseases, 57,000 cases, 6.3 per cent.
- Hernia, 56,000 cases, 6.2 per cent.
- Defects of ears, 41,000 cases, 4.6 per cent.
- Defects of feet, 36,000 cases, 4.0 per cent.
- Defective lungs, including tuberculosis, 26,000 cases, 2.9 per cent.

- Miscellaneous, 159,000 cases, 17.7 per cent.

The President said that in the cases of dental defects, hernias, eye trouble and even cardiac and musculoskeletal defects the ratio of cures is expected to be relatively high. Venereal cases are especially susceptible of salvage, he said, and venereal infected registrants will be kept under the orders of selection boards and instructed to get themselves cured quickly and report back for service. The salvage program, Mr. Roosevelt admitted, leaves for future consideration the larger question of why half of American youths are physically and mentally defective and why 100,000 had to be rejected because of a lack of a fourth grade education.

Col. Leonard G. Rowntree, chief of the Selective Service Medical Division, after a conference with the President said that the preliminary figures point to the inescapable conclusion that there is an urgent need for a national campaign for improvement of general health.

From the *Journal of the American Medical Association*, October 18, 1941.

Fresh water fish contain much less iodine than do salt water fish. *Hygeia*, *The Health Magazine* declares in a recent issue. Values ranging from 10 to 50 parts per billion of iodine have been reported for fresh water fish, whereas volumes of from 250 to more than 5,000 parts per billion have been reported for the salt water varieties. The iodine content of fish as a food is of course largely dependent on the iodine content of the water in which they live, *Hygeia* adds.

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL  
MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

- Chariton County Medical Society, December 2, 1940.  
Montgomery County Medical Society, December 2, 1940.  
Perry County Medical Society, December 14, 1940.  
Ste. Genevieve County Medical Society, December 17, 1940.  
Howard County Medical Society, January 2, 1941.  
Camden County Medical Society, January 7, 1941.  
Andrew County Medical Society, January 9, 1941.  
Benton County Medical Society, January 28, 1941.  
Clinton County Medical Society, February 6, 1941.  
Holt County Medical Society, February 8, 1941.  
Macon County Medical Society, February 15, 1941.  
Moniteau County Medical Society, February 15, 1941.  
Mercer County Medical Society, March 12, 1941.  
Dallas-Hickory-Polk County Medical Society, April 4, 1941.  
Miller County Medical Society, April 4, 1941.  
Morgan County Medical Society, April 5, 1941.  
Johnson County Medical Society, April 11, 1941.  
Webster County Medical Society, April 22, 1941.  
DeKalb County Medical Society, April 25, 1941.  
Carter-Shannon County Medical Society, May 1, 1941.  
Pulaski County Medical Society, May 24, 1941.  
Christian County Medical Society, June 12, 1941.  
St. Francois-Iron-Madison-Washington-Reynolds County Medical Society, July 9, 1941.

## ASSOCIATE EDITORS: COUNCILORS OF THE TEN COUNCILOR DISTRICTS

### FIRST COUNCILOR DISTRICT

#### A. S. BRISTOW, PRINCETON, COUNCILOR Nodaway-Atchison-Gentry-Worth Counties Medical Society

The Nodaway-Atchison-Gentry-Worth Counties Medical Society held a joint dinner meeting with the Northwest Missouri District (fifteen counties) Dental Society at the Country Club, Maryville, October 6. Arrangements for the combined session were made by Dr. E. B. Settle, Rock Port, of the program committee, and Dr. Jesse Miller, dentist, Maryville.

Members present were Drs. Henry C. Bauman, Fairfax; Emmett B. Settle, Rock Port; John M. Davis, Charles H. Flynn, Clifton M. Waugh, Tarkio; Charles T. Bell, B. F. Byland, W. R. Jackson, Robert C. Person, Maryville; Charles D. Hunberd, Barnard; Joseph C. Manning, Skidmore; Samuel E. Simpson, Stanberry, and P. J. Ross, Grant City. Guests were Dr. W. Logan Wood, Bolckow, and Dr. J. B. Aldrich, Shenandoah, Iowa. Thirty-six dentists attended the meeting.

Many of those in attendance played golf in the afternoon. A Dutch treat banquet was served at the clubhouse.

Dr. Samuel E. Simpson, Stanberry, called the meeting to order.

Dr. Claude J. Markt, President of the Dental Society, introduced Dr. Ralph W. Edwards, Kansas City, Professor of Oral Surgery in the Kansas City Western Dental College, who spoke on "Medico-Dental Relations," illustrating his lecture with colored lantern slides of oral conditions in which both professions have much concern. He gave a brief but enlightening discussion of the history of dentistry in both its "mechanical era," 1840 to 1910, and its "biological era," 1910 to 1941, and mentioned the new Harvard plan of dental education. His remarks on both common and unusual findings in oral pathology held much of value to his audience and his reports prompted many queries.

Copies of the book, "Infantile Paralysis, 1941, A Symposium Delivered at Vanderbilt University, April, 1941," were distributed by the Nodaway County Chapter of the National Foundation for Infantile Paralysis.

CHARLES D. HUMBERD, M.D., Secretary.

### EIGHTH COUNCILOR DISTRICT

#### WALLIS SMITH, SPRINGFIELD, COUNCILOR

##### Dallas-Hickory-Polk County Medical Society

The Dallas-Hickory-Polk County Medical Society met at Wheatland, October 7, in the office of Dr. A. S. Johnston, following a dinner at 7:00 p. m.

Members present were Drs. D. C. McCraw, Bolivar; A. J. Stufflebam, Humansville; R. E. Harrell, V. H. Greenwood and G. C. Plummer, Buffalo; A. S. Johnston, Wheatland; T. D. Wrinkle, Halfway.

A round table discussion was held with Dr. D. C. McCraw, Bolivar, vice president, presiding.

Dr. G. G. Robinson, Humansville, was elected a member by transfer from the Cherokee-Pickens County Medical Society, Canton, Georgia.

A vote of thanks was tendered Dr. Johnston for the dinner which preceded the meeting.

R. E. HARRELL, M.D., Secretary.

### TENTH COUNCILOR DISTRICT

#### E. J. NIENSTEDT, SIKESTON, COUNCILOR

##### St. Francois-Iron-Madison-Washington-Reynolds County Medical Society

Following the summer recess the St. Francois-Iron-Madison-Washington-Reynolds County Medical Society

held its first fall meeting at the St. Francois County Courthouse, Farmington, September 26, at 7:30 p. m.

Dr. Maurice B. Roche, St. Louis, gave a discussion on "Back Ache: Types and Treatment."

Dr. Joseph Grindon, Jr., St. Louis, spoke on "Drug Allergy."

Both presentations were well received by the members present.

C. C. AULT, M.D., Secretary.

### Scott County Medical Society

The Scott County Medical Society met at the public library in Sikeston on October 15. Those present were Drs. G. A. Sample, Chaffee; J. A. Cline, Oran; E. J. Nienstedt, H. A. Dunaway, A. D. Martin and M. G. Anderson, Sikeston; H. S. Miller, Dexter, and J. H. Cochran, Cape Girardeau.

The annual report of the medical care plan for Farm Security Administration clients was presented and showed that 96.5 per cent of allowed accounts had been paid.

Five reels of films on "Pediatrics" were shown and a round table discussion was lead by Dr. J. H. Cochran, Cape Girardeau.

W. O. FINNEY, M.D., Secretary.

## WOMAN'S AUXILIARY

### WOMAN'S AUXILIARY TO THE AMERICAN MEDICAL ASSOCIATION

President, Mrs. R. E. Mosiman, Seattle, Washington.  
President-Elect, Mrs. Frank N. Haggard, San Antonio, Texas.

### WOMAN'S AUXILIARY TO THE MISSOURI STATE MEDICAL ASSOCIATION

President, Mrs. James J. Drace, Cape Girardeau.  
President-Elect, Mrs. Frank L. Davis, St. Louis.  
Adviser, Dr. Herbert L. Mantz, Kansas City.

The Women's Auxiliary to the Missouri State Medical Association is sponsoring an essay contest among high school students again this year. Any high school student in Missouri may participate. The subject chosen is "Nutrition for Defense." Mrs. Frank L. Davis, 6123 Westminster Place, St. Louis, is essay contest chairman.

## BOOK REVIEWS

**NATURAL RESISTANCE AND CLINICAL MEDICINE.** By David Perla, B.S., M.D., Late Pathologist and Bacteriologist, Montefiore Hospital, New York, Instructor in Medicine, Columbia University College of Physicians and Surgeons, and Jessie Marmorston, B.S., M.D., Formerly Bacteriologist to Montefiore Hospital; Assistant in Pathology, Cornell University Medical College. Boston: Little, Brown and Company. 1941. Price \$10.00.

The conflict between host and invader is of intense interest to the student of medicine. In fact, it embraces the great bulk of medical study. The authors vividly portray the forces of this combat: on the one side the defending organism, on the other, the offending or infecting elements. They have collected an enormous amount of data (some five thousand references), re-

ported them impartially and lucidly and classified them as well as possible. The mechanical construction of the book is excellent. Each study consists of the three departments: facts, interpretation of facts and summary. The book should rank well for reference and for thorough reading as a volume. F. H. W.

**PROCTOLOGY FOR THE GENERAL PRACTITIONER.** By Frederick C. Smith, M.D., M.Sc. (Med.); F.A.P.S., Formerly Associate in Proctology, Graduate School of Medicine, University of Pennsylvania; Editor, The Weekly Roster and Medical Digest, Philadelphia County Medical Society; Editor, The Medical World, etc. Illustrated with 161 half-tones and line engravings and five color plates. Second revised edition. Philadelphia: F. A. Davis Company, Publishers. 1941. Price \$4.50.

This book follows its title very well. The anatomy of the rectum and anus is presented clearly and in simple language to aid in the diagnosis of anorectal disease. References to other specialties as, for example, urology, are stressed whenever symptomatology may cause confusion in diagnosis.

Throughout the book one receives timely warnings about that much overlooked disease—carcinoma of the rectum. Let me quote Dr. Smith so that all shall have it impressed upon their minds again the following dictum: "In every case presenting anorectal symptoms a complete examination should be made both with the finger and the proctoscope." Dr. Smith has fulfilled a very important duty to mankind if this book does nothing else except to make each physician who reads it remember to examine each case presenting anorectal symptoms thoroughly. This means that he must be familiar with the normal anatomy of the parts, he must have adequate office equipment and instruments for anorectal examination and, last but not least, he must not be contented until he has ruled out cancer of the colon, rectum or anus. I. A. W.

**THE PRINCIPLES AND PRACTICE OF OPHTHALMIC SURGERY.** By Edmund B. Spaeth, M.D., Professor of Ophthalmology in the Graduate School of Medicine of the University of Pennsylvania, Philadelphia, etc. Second edition, thoroughly revised. Illustrated with 451 engravings, containing 1149 figures and six colored plates. Philadelphia: Lea & Febiger. 1941. Price \$10.00.

This second edition brings Spaeth's book up-to-date, including the more generally used surgical procedures in keratoplasty and in the correction of myopia and retinal detachment.

It has become a standard both for the student and the practicing ophthalmic surgeon and well deserves its popularity.

The style is good, the descriptions readily understandable and the cuts excellent. V. L. J.

**A PRIMER FOR DIABETIC PATIENTS.** An Outline of Treatment for Diabetes with Diet, Insulin and Protamine-Zinc Insulin, Including Directions and Charts for the Use of Physicians in Planning Diet Prescriptions. By Russell M. Wilder, M.D., Ph.D., F.A.C.P., Professor and Chief of the Department of Medicine of the Mayo Foundation, University of Minnesota, etc. Philadelphia and London: W. B. Saunders Company. 1941. Price \$1.75.

A small compact book which contains a considerable amount of clear, concise information regarding the diabetic patient. It is a valuable adjunct not only to the patient who should have a copy but also to the attending physician. Both physician and patient will profit from reading this book. A. E. U.

# THE JOURNAL

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### THE DIFFERENTIAL DIAGNOSIS AND TREATMENT OF THOSE NONHEMO- LYTIC ANEMIC STATES FAILING TO RESPOND TO ADEQUATE LIVER OR IRON THERAPY

CHARLES A. DOAN, M.D.  
COLUMBUS, OHIO

Anemia is probably one of the most common symptom-producing signs met with in the practice of medicine today. To recognize its presence and to analyze and identify correctly its specific cause in each individual anemic patient is obviously prerequisite to rational effective treatment. The anemias due to blood loss, acute or chronic, are usually obvious. Following a series of brilliant investigation in recent years, the E. M. F. deficient, hyperchromic, macrocytic, and the iron deficient hypochromic, microcytic anemias have each yielded to specific therapeutic measures. Likewise, the hemolytic anemias are being recognized currently more frequently and, in the majority of instances, splenectomy is providing a complete and permanent cure.

Not so readily identified, however, as to cause and cure are certain other essentially normochromic, normocytic, anemic syndromes resistant to the "therapeutic test" of liver and iron. For the purposes of classification, most of these anemias may be placed in one of two general categories according to the underlying marrow pathology: (1) the hypoplastic, or (2) the myelophthisic syndromes.

#### THE HYPOPLASTIC (APLASTIC) ANEMIAS

So-called hypoplastic anemia almost always involves more than the red blood cells alone and therefore is a clinical and hematologic syndrome broader in its constitutional manifestations than the anemia itself. All of the marrow elements—

erythrocytes, granulocytes, thrombocytes—usually are involved sooner or later so that the initial manifestations may be a gradually increasing pallor with weakness (progressive erythrocytopenia), but almost as frequently the first sign is purpura (early thrombocytopenia) or, occasionally, infection (initial granulocytopenia).

The complete subsidence of all hemocytogenic activity is incompatible with life and results in a true "aplastic" anemia which is rapidly fatal despite all therapeutic measures. Those anemic states in which there are varying degrees of lessened hematopoietic activity may be spoken of as "hypoplastic" and, depending upon the etiology and promptness of recognition, may be more or less successfully treated.

As the physicians' understanding of the large number of chemicals and toxins potentially depressant to normal marrow activity increases, and as his acumen in history taking and his ingenuity in clinical and laboratory analyses develops, fewer and fewer cases of so-called idiopathic or primary aplastic anemia will be recorded. That is to say, patients with progressive marrow decompensation in whom after appropriate investigations, it is not possible to recognize an obvious or obscure, an active or latent cause for the symptoms and signs, are being seen increasingly rarely in clinics. When these exceptional instances are encountered, it is necessary to hypothesize a primary atrophy of mesenchymal stem cells (similar to primary adrenal cortical atrophy), an insufficient initial hereditary endowment of these elements or a suspension of cellular differentiation due either to lack of unknown but essential stimuli or to the dominance of as yet undetermined inhibitory influences.

The necessity of considering many factors other than the anemia in arriving at a differential diagnosis in the anemic patient cannot be over-emphasized. In table 1 are outlined for convenience and brevity both the positive and the negative findings which I have come to consider essential to the establishment of a diagnosis of hypoplastic anemia. Obviously one or more of these criteria may be lacking in any individual patient

Professor of Medicine and Director of Medical Research,  
College of Medicine, Ohio State University, Columbus, Ohio.  
Presented before the St. Louis Clinics, St. Louis, March 12,  
1941.

but, in general, unless complications alter the picture, the uncomplicated case of hypoplastic anemia will follow this pattern fairly closely. When any marked deviation from this syndrome occurs, the diagnosis should be reconsidered carefully.

Supravital and fixed cell studies of marrow removed by aspiration from the sternum have proved an invaluable adjunct to the peripheral blood surveys in more sharply differentiating this group of refractory anemias. Whenever the marrow is found to be grossly and microscopically hyperplastic, irrespective of the cellular levels in the circulating blood, a diagnosis of hypoplastic anemia is not justified. That is to say, this diagnosis should be reserved for those cases in which decreased marrow activity underlies the peripheral blood findings. More often than not, but not invariably, a careful qualitative study of the circulating blood cells (see table 1) will reveal accurate evidence reflecting a progressive marrow hypoplasia. It is desirable, however, and doubly reassuring always to supplement blood with marrow studies whenever hypoplastic anemia is suspected.

Furthermore, secondary marrow hypoplasia with resulting blood cell deficits may occur from a wide variety of causes and a bone marrow study frequently goes far toward differentiating between the types of causal factors. Overwhelming infection, either metastatic with local marrow abscess formation and septicemia or through circulating toxins, may more or less completely inhibit or destroy the developing blood cells at their source. Any of the common pathogens may select the blood and blood forming organs for attack, but the hemolytic and green streptococci (examples are post-partum sepsis and malignant endocarditis), the Friedlander's and typhoid bacilli and all the known human disease-producing viruses are the most frequent offenders. The chief therapeutic objective in bacterial marrow-toxemia must be the direct control of the infecting agent itself as by specific sera or appropriate chemotherapy, with small, frequent, supportive, fresh whole blood (not bank blood or plasma) transfusions. Spontaneous hematologic recovery usually will follow promptly the subsidence of the infection. At certain times it is not altogether easy to differentiate between overwhelming infection and infection secondary to prior drug-induced marrow insufficiency. In the latter case, marrow recovery with an adequate return of granulocytes to the blood must, of course, precede control of the infection.

Industry employs many volatile and other noxious chemicals to which constitutionally susceptible workers may succumb with the development of many and varied clinical syndromes, among which is that of hypoplastic anemia. One of the earliest (1897) of these toxic agents to be recognized was benzol, and Selling's<sup>1</sup> classic study in 1910 fully established its potential dangers to the hematopoietic equilibrium. Crude benzene, known commercially as benzol, is employed widely as a

solvent for rubber, gums, resins and fats of all kinds; it is volatile and in badly ventilated work rooms may exert its toxic effects by inhalation. If recognized early through anorexia, nausea and malaise before irreversible and irreparable destruction of the fundamental mesenchymal tissues has occurred, and if the patient is removed promptly and permanently from direct contact with the benzol or its fumes, gradual recovery usually follows. If and when recovery is complete, all future contact with this chemical must be avoided. A second toxic experience is rapidly fatal despite all medication, as all too tragic an opportunity to observe has been afforded when workmen have insisted and employers have permitted a return to the original job against all medical advice to the contrary. When contact with benzol in the first place has continued over a prolonged period without recognition of toxic marrow effects, only partial recovery may follow removal from exposure, with some residual degree of permanent marrow damage, frequently sufficient to prevent complete blood cell reequilibration. In figure 1 is presented such an instance, the data being for the most part self-explanatory. For more than a year the etiology of this patient's original vaginal hemorrhages and subsequent generalized purpura was not recognized. A widespread panmarrow hypoplasia with anemia, granulopenic leukopenia and thrombocytopenia was discovered in January, 1934. Immediate hospitalization with medical treatment as listed resulted in a gradual subsidence of the more acute manifestations of marrow decompensation, reflecting a partial restoration of the various cellular equilibria in the blood. After a year and a half, however, there still remained both clinical and laboratory evidences of inadequate circulating elements, more particularly recurring purpura with low blood platelets, and splenectomy was advised and accepted. The striking reestablishment of entirely physiologic ranges for all marrow elements following the removal of the spleen is clearly indicated in the graph and both the clinical and the hematologic recoveries have persisted without relapse to the present time, a period of eight years.

In another patient, an orchardist, careless in the

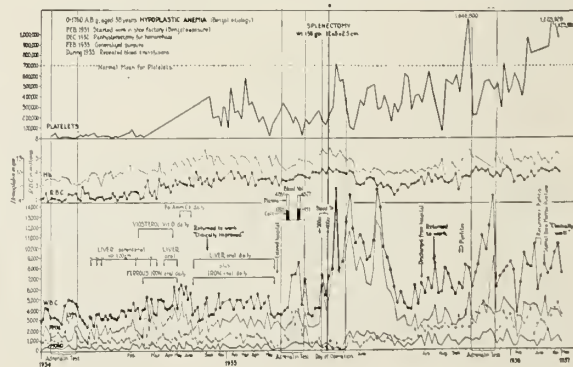


Fig. 1. (see text)

use of a variety of chemicals employed in spraying materials, a profound panmarrow hypoplasia developed, which initial blood transfusions did not benefit and which was influenced beneficially only partially by splenectomy; but subsequent large transfusions of compatible polycythemic blood (total 5,200 cc.) finally were followed by a normal hemocytopoietic reequilibration which has continued without relapse to the present time, a period of seven years. (Fig. 2.)

Statistical analyses show that approximately one in every 90,000 patients treated with arsenicals for syphilis develops a more or less severe depression of the bone marrow.<sup>2</sup> Arsphenamine, neoarsphenamine, stovarsol, sulfarsphenamine, silver arsphenamine, and tryparsamide all have been implicated, and the volatile hydrogen arsenide is a dangerous industrial hazard. Constitutional susceptibility is a factor. Symptoms may appear first from one to four months after a course of treatment has been completed (probably laboratory signs could be noted earlier if looked for). Fatalities have been reported after only two or three injections of the usual dosage. The effects either may be cumulative, therefore, or idiosyncratic (allergic). No test as a basis for predicting susceptibility has been devised. It has been suggested that a vitamin C deficit definitely lowers resistance and therefore the vitamin should be provided generously during arsenical therapy. Any untoward symptoms appearing during arsenical medication should be investigated; careful repeated blood studies should be made. Jaundice or any tendency to thrombocytopenia or leukopenia should be interpreted as warnings. When a patient presents evidence of a fully developed generalized blood cell deficiency, the sternal marrow will reveal the toxic nature and the extent and type of cellular damage as a basis for prognosis. Megakaryocytes are injured first, granulocytopoiesis next and erythrocytopoiesis last, with purpura a commonly presenting early sign.

Prevention is the most hopeful approach to this problem. The mortality in the reported fully developed cases of marrow aplasia has been 85 per cent.<sup>3</sup> The alert physician will be able to detect early manifestations of arsenical intolerance before irreparable mesenchymal destruction has occurred and prompt discontinuance of the drug may result in spontaneous recovery. Usually

blood transfusion must be resorted to. Marrow depression may persist for weeks or months, in one instance recovery occurring only after a series of fifty-two blood transfusions and in another after twenty-one transfusions (a total of 7,300 cc. of blood) over a thirteen weeks' period. Repeated sternal marrow studies often yield encouragement through evidences of beginning regeneration before the peripheral blood improves appreciably. Recovery depends upon whether or not the toxic effect has been only severely depressant or has gone on to absolute stem cell destruction. In actual experience, iron, liver, nucleotides, calcium, high vitamin supplements to the diet, whole or yellow bone marrow have failed to retard the exhaustion of the marrow.

Among trinitrotoluene workers, at least fifteen are known to have died of aplastic anemia.<sup>4</sup> The discussions pertaining to the management of benzol and arsphenamine aplasia apply equally in this instance.

During 1932 there appeared a series of articles in the French medical literature calling attention to the inhibiting effects of gold salts on the blood-forming organs. Sporadic reports of purpuric episodes during gold therapy had been made somewhat earlier. The general toxic character of gold compounds is apparent from the report by Towle<sup>5</sup> of some constitutional reaction in one of every six treated patients in a series of 451 cases analyzed. It is evident now that any reaction should be a distinct warning to discontinue therapy. The same types of bone marrow reaction have been described following gold therapy as have followed the use of arsenic, and the syndrome may be impossible to differentiate from idiopathic "aplastic" anemia without the history of exposure. Thrombocytes, granulocytes or erythrocytes may be affected independently or collectively. Hematologic reactions have followed immediately (anaphylactoid) after one or two injections totaling not more than 0.3 gm. of the gold salt ("chrysalbine"-sodium and gold thiosulphate<sup>6</sup>), or have not become apparent until after as many as nineteen weekly injections of gold sodium thiosulphate (.025 to 0.1 gm. each<sup>7</sup>).

Lacapere,<sup>8</sup> in calling attention to the dangers inherent in the use of large doses of gold in chronic arthritis, emphasizes the importance of repeated blood examinations, not less frequently than bi-weekly. Diminution in lymphocytes and elevation of eosinophils (above 6 per cent) he found significant. A falling platelet level or progressive anemia would reflect hemopoietic dysfunction equally. Here again the ultimate clinical result must depend: first, upon the early recognition of individual susceptibility and the prevention of irreparable mesenchymal damage by the toxic drug; and, second, upon appropriate supportive measures during periods of temporary thrombocyte or granulocyte inhibition.

Since the blood is the most radiosensitive tissue

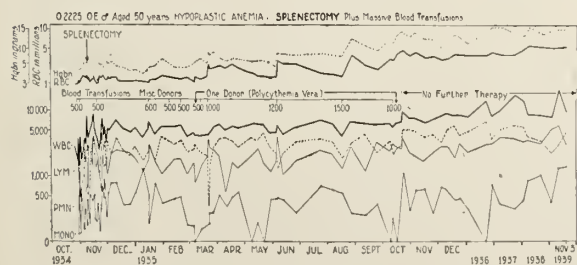


Fig. 2. (see text)

in the body it will reflect the earliest indication of injury from irradiation. Lavedan,<sup>9</sup> using the blood examination as a measure of the reaction of the blood-forming organs, found a marked individuality in the relative susceptibility of different radiologists to the hazards of frequent exposure. In some, there appeared evidences of initial, inhibitory hypoplastic changes within a few weeks; in others, there were no detectable alterations in quality or quantity of the blood cells after years of constant contact. In still others, a secondary stimulatory effect has been noted with a definitely higher incidence of myeloid leukemia reported in radiologists than in the general population. Fortunately, the majority of modern roentgen ray workers show no significant hematologic disturbances, a situation which may be attributed to the adequacy of the protective measures now almost universally employed. Nevertheless, it is extremely important that individuals engaged in daily occupational contact with roentgen rays or radio-active substances should have regular, careful blood studies, not less frequently than once a month. Any tendency to lymphopenic leukopenia, thrombocytopenia, anemia or the appearance of circulating immature myeloid elements should be the indication for an immediate vacation, with serious consideration of a change of occupation. The effects are cumulative and after a certain point irreversible. Prevention is the only effective cure. Blood transfusions are at best palliative and soon become ineffective if the noxious influence has persisted for too long a time. Patients requiring deep roentgen ray therapy, likewise, must be followed with great care hematologically, as well as clinically, inasmuch as in this case also individual blood cell susceptibility is a variable. A temporary, rather than permanent, depression of essential cellular elements is more likely under these circumstances and blood transfusions may tide the patient over the period required to accomplish a desired therapeutic effect. Under such circumstances it may be necessary to take certain chances with the radiosensitivity of the hemopoietic tissues in order to attain the necessary main objective, and in the majority of instances this will prove to be safe.

Rolleston<sup>10</sup> cites experimental evidence of a greater penetration of bone marrow by gamma rays from radium than by roentgen rays and finds a relatively greater incidence of aplastic anemia in radium workers. The tragedy of the radium watch-dial painters<sup>11</sup> illustrates the special danger of any deposition within the body of radioactive materials with subsequent constant bombardment of surrounding visceral cells. Progressive marrow hypoplasia may develop. In some instances malignant osteosarcomatous changes have followed the chronic irritation<sup>12</sup> of such substances as mesothorium and radium chloride. The potential danger of using thorium dioxide sol to delineate liver and spleen through clasmotocytic phagocytosis in these organs is apparent, although Yater and Whitmore<sup>13</sup>

recently have published a three year follow-up study of a series of cases receiving on the average 75 cc. of a 22 per cent suspension in none of which they could find histopathologic changes in skin, liver or spleen, other than fibrous tissue reactions. No hematologic data and no bone marrow studies were reported in any instance. The value and importance of the additional information, which such a visualization of spleen and liver may provide the physician, is questionable, and the potential dangers, when this procedure is invoked in patients other than those with a disease with sharply limited life expectancy, would appear to outweigh its doubtful advantages. Flinn and Seidlin<sup>14</sup> report suggestive results in their approach to the problem of the elimination of deposited radioactive materials from the body, based upon the pioneer studies of Aub and his associates in lead demobilization. Intramuscular injections of parathormone, from 10 to 50 units each, were given not oftener than every other day, to avoid cumulative effects, for periods of from one to two months. Frequent blood calcium and blood phosphorus determinations were made. Electroscopic tests showed increased elimination of radioactive material by way of the stools during medication and, thereafter, diminished radioactivity of the patient's body as a whole. The general condition of the patients so treated showed marked improvement.

The costly toll of scientific and industrial lives, which in recent years has followed injudicious radium exposure, serves to emphasize the imperative need for prevention. The first signs of a beginning toxic effect may be looked for in the cells of the circulating blood and, until this evidence appears, there are no observations or tests upon the basis of which a prediction may be made of an impending disturbance. Frequent checks of the blood cell picture should be made at regular intervals in all radium workers despite any presumed effectiveness of protective measures incidental to radium handling.

The importance and significance of nutrition to all anemic states, in which actual toxic destruction or pathologic inhibition of hematopoiesis may be eliminated as factors, has become axiomatic today. Hypoplastic anemia is no exception to this general rule. Marrow hypoplasia develops promptly in the pigeon upon withdrawal of the normal diet. In the mammal this is not demonstrated so readily because of the briefer period of survival. Duke<sup>15</sup> has reported a chronic hypoplastic anemia developing in an adult with a congenitally small stomach with gradual recovery during the succeeding two months on a diet rich in liver and all supplementary vitamins. Prior to the introduction of liver therapy, pernicious anemia was reported to have terminated occasionally with complete marrow aplasia; granulopenia and thrombocytopenia occur regularly in relapse secondary to megaloblastic hyperplasia. Five of eight cases of sprue were found by Fairley et al<sup>16</sup> to have aplastic bone marrows. Pel-

lagra, fatty diarrhea, intestinal parasites and sprue have been described by Witts<sup>17</sup> as terminating on occasion with an aplastic type of anemia, presumably upon a nutritional basis. Miller et al<sup>18</sup> recently described a panhypoplasia of marrow in white rats fed upon a vitamin B<sub>6</sub> deficient diet, while Fouts et al<sup>19</sup> reported anemia only under similar circumstances in puppies. The inclusion of every dietary factor known to influence hemopoiesis and the careful survey of all pertinent, physiologic and pathologic constitutional factors, more especially those involving the integrity of the gastrointestinal tract and the digestion, absorption and utilization of vital food elements, should be a part of every program designed to control hypoplastic syndromes.

#### MYELOPHTHISIC ANEMIA

One of the more important and frequently overlooked mechanisms in the production of an insidious, slowly progressive, therapy-resistant anemia is that involved in the gradual invasion of bone marrow by foreign cells at the expense of normal hemopoiesis. This syndrome often is confused with aplastic anemia and occasionally with pernicious anemia, involving as it does an enforced restriction or mechanically induced "hypoplasia" of normal hemopoietic foci. The symptoms may develop rapidly but more characteristically the disease runs a slowly progressive clinical course, frequently persisting for many months after the first signs appear, masking as one or another of many more obvious syndromes. Reference to table 2, in comparison and contrast with table 1, may help to differentiate more sharply myelophthistic from the hypoplastic syndromes and each of these in turn from anemias of other mechanism and etiology.

Osteosclerosis, plasma cell multiple myeloma, metastatic carcinoma, lymphosarcoma, Hodgkin's disease, miliary tuberculosis and the subleukemic types of myeloid, lymphoid and monocytic leukemia represent the more commonly encountered myelophthistic entities. If a careful qualitative survey of the peripheral blood elements does not indicate the underlying pathology, a properly performed, successful and adequately interpreted sternal marrow cell study will always give the correct diagnosis.

Once the diagnosis is established, therapy is, of

Table 1. Hypoplastic Anemia—Differential Diagnosis

1. History of toxic medicinal or industrial agents.
2. No weight loss, no anorexia.
3. Normal basal metabolic rate.
4. Hypochlorhydria.
5. Adenopathy, minimal (reciprocal lymphopoiesis).
6. No splenomegaly.
7. Granulopenic leukopenia, no immature myelocytes.
8. Thrombocytopenia, purpura prominent sign early.
9. Anemia, normochromic, normocytic.
10. Reticulocytes, absolute decrease.
11. Red blood cell fragility, normal.
12. Erythrocyte sedimentation index (corrected) normal.
13. Plasma iron high.
14. Sternal bone marrow, panhypoplasia affecting all normal elements.

Table 2. Myelophthistic Anemias—Diagnostic Criteria

1. Deep bone pain, nocturnal exacerbations (pathognomonic).
2. Roentgen ray skeleton—bone erosion.
3. Weight loss, progressive cachexia.
4. Basal metabolic rate elevated (thyroid gland and iodine metabolism normal).
5. Free hydrochloric acid-gastric analysis (except in gastric carcinoma).
6. Bence-Jones protein, plasma and urine (multiple myeloma).
7. Granulopenia with immature myelocytes.
8. Presence or absence of invading foreign cells (plasma cells, lymphosarcoma cells, leukemic cells).
9. Thrombocytopenia—purpuric manifestations late only.
10. Anemia, normochromic or hypochromic.
11. Reticulocytes increased, with nucleated red blood cells.
12. Sedimentation index, rapid.
13. Red blood cell fragility, normal or moderately increased.
14. Sternal bone marrow—foreign cell hyperplasia.

course, directed toward the primary disease. If the metastatic hyperplasia of foreign cells in marrow is diminished by roentgen ray or other differential inhibiting agent, spontaneous regeneration of all marrow elements will occur promptly and spontaneously without any specific hematopoietic stimuli. If the proliferation of tumor cells continues within the inelastic bony confines of the skeleton, no attempts to increase blood cell formation per se can be successful. Compensatory extramedullary hemocytopenia occurs only rarely. Blood transfusions serve only as a temporary support while other measures are being instituted.

#### SUMMARY

Many, if not most, of the anemic states dependent upon defective blood formation or blood destruction (hemolysis) are now recognized and may be treated rationally. Those anemias secondary to direct marrow damage or marrow cell displacement and, therefore, failing to respond to the usual therapeutic measures are less obvious and the constitutional signs and symptoms by which they may be identified further are not so well known. Careful qualitative studies of the blood cells are far more significant than any quantitative data in arriving at a differential diagnosis and sternal aspiration of marrow cells adequately interpreted should establish definitely any doubtful syndromes.

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## MODERN CONTROL OF PNEUMONIA

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PHILADELPHIA

The purpose of this paper is to discuss briefly some of the factors involved in the modern control of pneumonia. Since the majority of pneumonias (approximately 92 per cent) are caused by the pneumococcus, I will limit this discussion to pneumococcic pneumonia.

The greatest advance in the control of pneumonia has been the introduction of the sulfonamide drugs in the treatment of this disease. It is true that the results obtained with sulfanilamide *per se* were not remarkable but subsequent to its discovery several newer compounds of this group have been shown to possess definite therapeutic effectiveness in pneumonia. Successful chemotherapy of this disease was demonstrated first with the use of sulfapyridine. Within the last four years numerous clinical reports<sup>1, 2, 3</sup> have established its therapeutic effectiveness unquestionably. In the fall of 1939 there became available another sulfonamide derivative, sulfathiazole, which has proved to be equally effective in the treatment of pneumonia as is sulfapyridine, and at the same time to be less toxic. My own clinical experience with sulfathiazole<sup>4, 5</sup> combined with the reports of others, leads me to believe that it has replaced sulfapyridine as the principal therapeutic reliance in pneumonia. Within the last few months still another sulfanilamide derivative, sulfadiazine, has been introduced for the treatment of pneumonia. Personal experience<sup>6, 7</sup> with this latest sulfonamide indicates that it is equally as effective as sulfathiazole and is also somewhat less toxic. Although my use of it is quite limited, it is my impression at this time that sulfadiazine will have a

place in the treatment of pneumonia and may prove to be the drug of choice.

As can be seen, advances in the chemical treatment of pneumonia have been occurring at an ever accelerating pace during the last few years. To consolidate these advances and to evaluate the merits of this form of therapy it will be necessary to accumulate extensive data from different sources over a period of years. Of considerable interest, however, is data collected in a single hospital where these compounds are being used, and also data from a pneumonia control program in which chemotherapy is employed on a state-wide basis. Hence, I will limit my remarks to the use of these drugs in the treatment of pneumonia at the Philadelphia General Hospital and in the Pennsylvania Pneumonia Control Program.

Sulfapyridine was first introduced at the Philadelphia General Hospital in August 1938 and since then more than 1,000 adult pneumonia patients have been treated with sulfapyridine, sulfathiazole or sulfadiazine. The fatality rate for this group of patients was approximately 10 per cent. During the five years prior to the use of these drugs in that hospital the fatality rate of pneumonia was more than 40 per cent. From these data it becomes apparent that chemotherapy has had a definite effect on the death rate from pneumonia at the Philadelphia General Hospital. Not only have these drugs markedly reduced the number of pneumonia deaths in that institution but they have had a similar effect on the incidence and severity of the complications of the disease. Before the advent of sulfapyridine the incidence of empyema was approximately 8 per cent as compared to 1 per cent at the present time in drug treated cases. Furthermore, the average hospital stay of patients suffering with pneumonia has been reduced from approximately twenty-one to thirteen days, which represents a definite saving both to the patient and to the hospital.

Despite the proven therapeutic effectiveness of chemotherapy, a certain number of pneumonia patients in whom it is used fail to recover. I have recently reviewed<sup>8</sup> the influence of certain factors on the prognosis of this disease in cases receiving sulfonamide treatment. This study included the first 800 adult pneumonia cases which were treated with sulfapyridine or sulfathiazole. In this group there were eighty deaths (10 per cent mortality). The age of the patient probably represented the most important single factor in the prognosis of the disease as the mortality rate was 3.5 per cent for patients under 39 years of age as compared to 15.4 per cent in the higher age group. This significant difference in fatality rate was largely a result of the higher incidence of associated diseases in the older patients. The type of pneumococcus responsible for the infection and the presence of bacteremia also had a direct bearing on the prognosis. In this series of cases the first three types of pneu-

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mococci were the most prevalent and resulted in the highest fatality rate (12.2 per cent). This was largely a result of the high incidence (17.4 per cent) of type III infection which gave a mortality rate of 20 per cent as compared to 7.7 per cent for types I and II. The greater number of deaths in this subgroup is explainable by the high incidence of type III infections in elderly and debilitated patients. The incidence of bacteriemia was 12 per cent, with a mortality rate of 32.3 per cent as compared to 6.8 per cent in the nonbacteriemic cases. The incidence of severe complications (empyema, meningitis, endocarditis) was low (1.7 per cent) but the mortality rate for this group was 53.8 per cent. Associated diseases were present in 33 per cent of the cases. Heart disease constituted the most common condition and also resulted in the highest mortality rate (31.1 per cent). Patients suffering with alcoholism had a mortality rate of 20 per cent, twice that of the entire series. Of 65.3 per cent of patients who received treatment during the first four days of the illness there was a fatality rate of 5.6 per cent as compared to a fatality rate of 18.4 per cent in those treated after the fourth day of the disease.

Whether the mortality rate of 10 per cent reported here for hospital treated cases will be further reduced is a matter for conjecture. No doubt further experience will result in a better understanding and more intelligent use of these drugs in the future, which may tend to decrease the present fatality rate. However, it is possible that the continued and widespread use of the sulfonamides in many types of infections will result in more individuals becoming sensitive to these drugs and thus limit their usefulness in pneumonia. Although this possibility does exist, a recent review of the records of twenty-six pneumonia patients who received a member of this group of drugs on two or more occasions, the therapeutic response and incidence and severity of toxic effects, in general, were comparable during each hospital stay. However, because of the toxic effects associated with the use of these drugs, it is sometimes impossible to employ chemotherapy and the patient's chances of recovery are reduced unless specific serum is available. Furthermore, if certain of these toxic effects are overlooked and chemotherapy is continued, it may lead to a more serious condition than that caused by the infection. Considering these factors which tend to influence the fatality rate of pneumonia, there seems to be little reason to expect that the future will tend to alter the incidence of the infecting organism, the incidence of bacteriemia, the age of the patient, the number of associated diseases or the occurrence of alcoholism. However, through widespread lay and medical education, the number of patients who are treated during the first four days of this illness may be influenced. If this is achieved, a reduction both in the incidence of serious complications and in the mortality rate of pneumonia may be ex-

pected. On this hangs the most important single factor in the future control of the disease.

#### STATE PNEUMONIA CONTROL PROGRAM

Five years ago the Commonwealth of Pennsylvania, through the combined efforts of the Medical Society of the State of Pennsylvania and the State Department of Health, embarked on a statewide pneumonia control program. From the beginning it was realized that certain objectives must be realized if the program was to succeed. Reduced to simple terms, the plan of action in curbing pneumonia has been developed on the following prerequisites: (1) Pneumonia must be regarded as a serious medical emergency, such as acute appendicitis, requiring an accurate diagnosis with prompt specific treatment. (2) The public must have knowledge of the cardinal symptoms of pneumonia in order that the family physician may be summoned on the development of the first symptom of the disease. (3) Once the physician has been called it is his responsibility to make a correct diagnosis and to institute specific treatment as soon as possible.

In order to fulfill these prerequisites the following program has been developed: (1) The state is divided into twelve geographic districts. Each district is represented by a councilor, appointed by the president of the State Medical Society, and the twelve councilors constitute the State Pneumonia Control Commission. In each of the twelve councilor districts there are from three to five county medical societies, each having a pneumonia control committee. Through these committees is carried out a wide spread educational program on pneumonia to the practicing physician of the state. At the annual state society meeting each fall a morning is devoted to the subject of pneumonia control. Throughout the fall and winter months meetings are held in the local county societies. At these meetings members of the state pneumonia commission present the latest developments on diagnosis and treatment. In addition to these meetings, postgraduate courses, organized at strategic points throughout the state, are conducted by the State Medical Society; also important literature dealing with pneumonia is distributed to all physicians in the state by means of a bulletin published by the State Commission. (2) In an effort to make the public pneumonia conscious, a separate lay educational program is conducted. Throughout each councilor district a representative of the State Department of Health arranges health programs in the schools, social clubs and other such groups. Speakers for these talks are supplied by the county medical societies' pneumonia control committees. At these meetings the public is enlightened as to the predisposing causes of pneumonia, the symptoms of the disease and the importance of calling the family doctor promptly. Appropriate motion pictures are used to illustrate these points.

Granting, therefore, that the physicians are well informed on the recent developments in the control of pneumonia and the public is conscious of the importance of calling a physician, the most important remaining factor is to supply the necessary materials for proper diagnosis and specific treatment. This phase of the program is carried out by the State Department of Health as follows: In recognized laboratories throughout the state, 177 pneumonia control stations have been established. From these stations the attending physician may obtain free for any patient suffering with pneumonia for whom the private purchase would work a financial hardship, serum in any type, sulfapyridine or sulfathiazole or both serum and drugs. Type specific serum is being made available as it is felt that serotherapy still has a place in the control of pneumonia. In addition, the physician is supplied with sterile containers for sputum, culture bottles for blood and oxalated tubes for blood counts and blood levels of the drug. These laboratory procedures are carried out by the control station at no cost to the patient. The only request that is made is that the physician record his findings and the outcome of the case on a card which is given him at the control station with a self-addressed stamped envelope to be returned to the Department of Health. The physicians' responses have been most gratifying as more than 97 per cent of the cards are sent in. Not only are those cases treated with state supplies being recorded, but in each county the pneumonia committee collects data on all cases regardless of the source of materials used.

For the first three years of the program anti-pneumococcus serum was employed as the chief therapeutic reliance, but because of certain difficulties associated with its use, the efforts were somewhat disappointing. In the fall of 1939 chemotherapy was first included and this was done because of the following: (1) it is readily accessible, (2) it is easily administered, (3) it can be had for a relatively low cost to the patient, (4) it possesses uniform potency, (5) it is useful in all types of pneumococcal pneumonia, (6) it markedly reduces the incidence of complications from the disease. Pennsylvania was the first state to use sulfapyridine on such a wide scale although many other pneumonia control programs now employ chemotherapy. During the first three years, when serum was used alone, an average of 1,500 cases a year were treated with facilities made available by the Department of Health. In contrast to these figures, during the pneumonia season of 1939 to 1940, the first in which chemotherapy was used, materials were issued for the treatment of 9,500 pneumonia patients,<sup>9</sup> some six times as many cases as were treated previously from the same source. This does not represent the total number of cases treated but only that group which, because of financial hardship, was unable to procure medication at its own expense.

The average annual pneumonia deaths in Pennsylvania for the ten years prior to the introduction of chemotherapy into the control program were 8,696 as compared to 4,788 during the first year of chemotherapy. This represents the lowest figure ever recorded in the Commonwealth of Pennsylvania. Such factors as seasonal variation in virulence of the disease, industrial activity, crowding and others may have played a part in this decrease in death rate. However, during last year pneumonia was not mild and morbidity reports showed an increase of 22 per cent in the incidence of the disease. That the disease was of a virulent variety is attested by the fact that 15.7 per cent of the typed cases were caused by the most virulent pneumococcus, type III infection. It is felt that the answer probably is found in the fact that a greater number of cases received the benefit of adequate specific therapy. Of these 9,500 cases the mortality rate was approximately 10 per cent<sup>9</sup> as compared to the expected fatality rate of from 25 to 30 per cent in patients receiving nonspecific therapy.

From this discussion it appears that chemotherapy plays an important role in the modern control of pneumonia. No doubt, with the continued and widespread use of the sulfonamide drugs more and more people suffering with pneumonia will be saved. However, despite the fact that the general mortality rate will be lowered, higher fatality rates in hospital treated cases may be expected than have been reported during the last several years. More patients are being cared for at home now and those in whom drug therapy has apparently failed often are sent to a hospital. Thus, fewer cases of pneumonia are being seen in hospitals but these usually represent seriously ill patients.

#### CONCLUSION

Success in the control of pneumonia depends on two important factors, early diagnosis and specific treatment. Since pneumonia is a definite public health problem, this disease is handled best by the various public health agencies with the close cooperation of the practicing physician.

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## THE DEVELOPMENT OF PROSTATIC "HYPERTROPHY"

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A clear understanding of the developmental phases of prostatic "hypertrophy" will rationalize the surgical and hormonal treatment of the disease and help to stabilize the approach toward the prevention of its development. About one third of the patients who come to operative treatment have been subjected to courses of hormonal treatments. Several hormones, both male and female, have been used without uniform result. If there is any basis for the use of hormones in the treatment of prostatic "hypertrophy," it must be found in the causes for its development. So far the causes for the development of prostatic "hypertrophy" are not actually known.

Man is the only animal which develops a prostatic enlargement causing urinary obstruction and retention of urine. This enlargement develops during the latter part of life. Medicine and public health have done much to lengthen the span of life, thus projecting man into the age of prostatism. Sixty-five per cent of men at 65 years of age have, or are developing, a prostatic enlargement.

Most prostatic enlargements are glandular in nature. In old age, glandular structures usually shrink in size and atrophy. Prostatic enlargement represents the reversal of this process. The histologic structure of this glandular enlargement resembles much that of the normal gland. It is, therefore, natural to expect that new glandular tissue takes its origin in preexisting glandular structures. Albarran and Zuckermandl believed that the so-called prostatic hypertrophy developed from suburethral glands of the posterior urethra. Marion thought that the "hypertrophy" could develop from any of the glandular structures of the prostate. Embryologically, according to Lowsley and Walker, the glands of the prostate develop from the epithelium of the posterior urethra. Further than this work, little has been added to the knowledge of the prostatic gland for many years.

Buried beneath 100 years of modern science is the observation of Velpeau (1841) who recognized fibromuscular masses in the prostates of elderly men. Thompson, in 1873, also recognized fibromuscular masses which he likened to early uterine myomata. During the interim, various theories for

prostatic "hypertrophy" have been promulgated. Chronic inflammation has been and still is advocated; however, it is well refuted by Cabot and Smith. The arteriosclerotic, functional and constitutional theories have now been passed by and the present day or neoplastic theory is the most plausible. While the word "hypertrophy" has been in habitual use, I will attempt to show that the lesion is really one of hyperplasia and not "hypertrophy."

First, it is necessary to demonstrate where and how prostatic enlargement develops. Since animal experimentation has failed thus far to produce a lesion comparable to the one in man, it seems that the only approach to the problem is by the study of the lesion in its earliest phases in autopsy specimens.

Large numbers of prostates in men 45 years and older were obtained, fixed and cut in serial sections. Only prostates with small lesions were studied. These lesions occurred in the muscular wall of the posterior urethra. They may be single, multiple, glandular, aglandular or a mixture. They are located in the lateral walls and beneath the floor of the urethra. The glandular masses never occurred without the presence of an aglandular mass. On the contrary, aglandular masses did occur in sufficient frequency without glandular masses so that there is no doubt but that the aglandular mass is the primary growth. Both masses are formed relatively early in the development of the tumor so that when the mass is large enough to be detected per rectum or by cystoscopy it usually contains both kinds of tissues.

The primary or aglandular masses vary in length from 500 to 20,000 microns, are cigar-shaped and irregular in places and develop lengthwise in the urethral muscular wall. As many as sixteen have been encountered. They are prone to unite with each other and become nodular. The youngest mass appears as a proliferation of fibromuscular tissue, always in the muscle wall of the urethra and never in the lateral or posterior lobes of the gland. At times, it takes the appearance of light-staining fibrous tissue around a tiny blood vessel but never around a prostatic duct. At first, the fibromuscular mass is not encapsulated. As it increases in size, blood vessels appear within it and, as the stroma becomes more compact, a fibrous capsule develops at the periphery, probably due to compression. Also, as the mass increases in size its fibromuscular fibers take on a whorl-like appearance and a positive muscle stain similar to the early uterine myoma.

The early glandular masses are found also in the muscular wall of the posterior urethra. They are surrounded by circular fibers of muscular tissue. Their acini show both actively budding epithelial projections and cystic areas. Although cystic areas appear early, corpora amylacea are not found until later. As the mass or masses increase in size they deflect the urethra and compress the lateral and posterior lobes. The muscular wall of the

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urethra is split up greatly and its fibers deflected and atrophied by these numerous masses. When they become still larger, they are described surgically as lateral lobe or median lobe enlargement, depending on the direction of their growth.

*Relationship of Aglandular and Glandular Masses.*—By cutting these aglandular masses serially one finds that the glandular mass forms from the invasion of an aglandular mass by epithelial buds from a prostatic duct. The epithelial buds form glands which grow more rapidly than the fibromuscular tissue and sooner or later invade the whole fibromuscular nodule. Consequently one finds the surgical specimens mostly glandular. If one examines surgical specimens carefully, one finds leiomyomatous nodules. Dial and Halpert comment on eleven cases in which the median lobe was wholly leiomyomatous. Patch and Rhea found that 25.4 per cent of 181 consecutive surgical specimens contained nodules of leiomyomatous nature. Careful investigation will disclose, in the surgical specimens as well as in the autopsy specimens, various phases of invasion of the aglandular nodule by the epithelial tissue. Nodules adjacent to the urethral mucous membrane remain uninvaded. So, if one studies the urethral side of a lateral lobe enlargement, a solid fibromuscular mass frequently is found. I have encountered two surgical specimens which were composed of three lobes, practically all of which were leiomyomatous. The literature contains reports of eighteen specimens which were wholly leiomyomatous. Glandular tumor tissue was absent. The leiomyomatous tumors formed lateral and median lobes like the glandular tumors. The patients from which these specimens were obtained had the same symptoms of prostatism that are seen in patients with glandular tumors. One must, therefore, conclude that the primary or aglandular nodule remains aglandular if there is no invasion of it by the epithelial tissue. They may develop to immense size. Mimpriss reports a tumor weighing 570 grams in a man of 60 years who had complete obstruction to urination.

Since surgical specimens frequently contain leiomyomatous or fibromuscular nodules, it is difficult to believe that the aglandular or glandular masses are disassociated. I can not agree with Wolman that the aglandular masses have no relation to the so-called glandular hypertrophy. Ribert, Simmonds, Niemeyer, and Horn and Orator concluded that there is a leiomyomatous type of prostatic enlargement. Virchow preferred to call the smooth muscle tumors of the prostate hyperplastic myomas. Tandler and Zuckerkandl believed that the leiomyomatous tumors of the prostate are the result of inflammation. One can not believe that inflammation from infection is a factor because the smooth muscle masses have fibers running at right angles to the ducts and vessels of the prostate. They do not circumvent these structures as is seen in cystic mastitis. These aglandular masses fail to show polymorphonuclear and round cell

infiltration. Hirsch suggests that the aglandular spheroid may be the end result of a glandular spheroid. I believe that the reverse is true.

*Glandular Nodule.*—The development of the glandular structures of the so-called prostatic hypertrophy is from the ducts of the prostate. The factor which promotes this stimulation of epithelial growth is open to debate. Since only that side of the duct adjacent to the nodule shows epithelial growth response, it is fair to assume that the aglandular nodule has some inherent quality which invites and causes epithelial stimulation. Embryologically the prostatic ducts and glands are derived from the epithelium of the posterior urethra. May not the duct epithelium retain some of the anlage qualities and under certain stimulation produce glands similar to the glands in the normal prostate, for such is the histologic architecture of the glands of the so-called hypertrophy? The glandular growth is truly a hyperplasia, not a "hypertrophy," as it is so often termed. This hyperplasia so nearly represents normal glands in a normal prostate that it is difficult to differentiate the two. Reischauer believed that he could demonstrate such a development from the prostatic ducts. Le Duc, by injection of the prostatic ducts with ink, concluded that the submucosal glands in the posterior urethra were but a part of the prostatic duct and glandular system. If such is the situation, it would not make any difference whether the epithelial proliferation came from the ducts or glands, and the newly-formed glandular tissue would take the same architectural appearance. The epithelial response may be a reawakening of a latent embryologic activity possessed by the epithelial cells of the prostatic ducts. The actual activating factor is unknown but may be one of the male hormones.

*Aglandular Nodule.*—The fibromuscular nodule, the primary growth in the development of the so-called prostatic hypertrophy, resembles closely the early lesion of the uterine myoma. It takes on a whorl-like arrangement of the fibers. It becomes encapsulated and takes the same fibromuscular stains. It is common to find many nuclei of nodules near the verumontanum but always in the muscular wall of the urethra. The utriculus masculinus is a homologue of the uterus and is derived embryologically from the müllerian duct system. Lowsley and Walker both state from their studies of the embryologic development of the prostate that muscle fibers of the müllerian duct system pierce the posterior urethra near the verumontanum and entwine themselves into the regular muscle fibers of the urethra. Since the uterine myoma is developed from a muscle cell, may not the primary prostatic tumor which so closely resembles the uterine myoma have a similar origin or a common embryologic anlage?

Both the fibromuscular and glandular tissues which form the benign overgrowth of the prostate are derived from tissues of the posterior urethra. There is considerable evidence that these tissues

may possibly be stimulated to growth by sex hormones. Research has proven beyond a doubt that the tissues of the posterior urethra, prostate and seminal vesicles in the male are sensitive to hormones, both male and female. It is a well known fact that castration early in life is followed by atrophy of the prostate, prostatic glands and seminal vesicles. The work of myself and associates, Van Wagenen and Jenkins, several years ago on rats and monkeys showed that after castration there was a definite atrophy of the internal genitalia. Eunuchs never have been known to develop so-called prostatic hypertrophy. Castration in the male after prostatic enlargement has become pronounced does not in any way reduce the size of the prostatic tumor. There are many reports of testosterone injection which has failed to reduce the size of the prostatic gland after it has become enlarged. The only fact that can be demonstrated is a general increase in muscular tone of the individual. Dr. Heckel reports a diminution in spermatogenesis, thus an adverse effect on the testicle itself. This is an example of testicular hormone affecting the normal tissues in a definite manner while the abnormal development of tissues, which form the so-called prostatic hypertrophy, is unaffected either by castration or by administration of testosterone propionate.

The dog develops a benign enlargement of the prostate which causes frequency of urination but not retention of urine. The pathology of the dog's benign prostatic enlargement is suggestive of an adenoma while the tissue in the benign prostatic enlargement in man does not represent an adenoma but a duplication of prostatic gland tissue. Castration of the dog does reduce the benign prostatic enlargement. Lower was able to produce a true prostatic hypertrophy in the dog by male hormone. Hence one must conclude that the enlarged prostatic tumor in the dog is related more closely to testicular hormone than in man. The normal prostatic tissue in man is so compressed and atrophied by the tumor that there can be but little reaction on the part of the true prostate from the injection of male hormone.

There is a definite response of the tissues in the posterior urethra and prostate and seminal vesicles to the administration of female hormones. Several years ago my collaborators and I, experimenting with monkeys and rats, demonstrated that after the administration of theelin the epithelium of the posterior urethra became greatly thickened, squamous and hornified in character, together with a production of fibromuscular tissue around the urethra, an increase in the fibromuscular stroma of the seminal vesicles and a diminution of the glandular tissue of the prostate and seminal vesicles. Recently, Nelson has been able to produce a myoma of the uterus in the guinea pig by the injection of the female hormone. This also has been corroborated by Perloff and Kurzrok. Thus muscular tissue developments are produced similar in

character to the primary tumor tissue of so-called prostatic hypertrophy. Further evidence of fibromuscular development by a similar hormone is found in the fibro-adenoma of the breast. Here, periductal and periacinar fibromuscular tissue is definitely produced and, according to Geschickter's work, this development is due to an estrogenic factor. There is further evidence of female hormone reaction in the trigone and lower ureter during pregnancy, in which there is first an atrophy and then a hypertrophy which increases with the pregnancy and subsides with it.

Prostatic tumors occasionally develop on the ureteral ridge and trigone as pedunculated lobes. These tumors do not seem to have any connection with the prostate but do have a fibromuscular element as well as glandular tissue which closely resembles prostatic tissue. I have two such cases. Le Duc of San Diego corroborates this finding and presents a specimen which beyond doubt is of such a nature. May it not be possible that benign overgrowth of the prostate, besides developing from the müllerian duct system, may be developed from the wolffian duct system?

The prostatic benign tumor, then, contains two types of tissue, the fibromuscular and the glandular tissue, both of which take their origin from tissues of the posterior urethra which are highly sensitive to both male and female hormones. The normal glandular tissue of the prostate is responsive to testicular hormone while the glandular tissue of the benign overgrowth is not responsive to the administration of the male hormones. The female hormone stimulates fibromuscular tissue which simulates the primary tissue tumor of benign overgrowth of the prostate. It is difficult, then, to support the rationale of treating prostatic "hypertrophy" with the male hormone. Likewise, the administration of the estrogenic hormone for prostatic "hypertrophy" theoretically and experimentally should produce more fibromuscular tissue or, if such a tumor is present, cause increase of its growth. The only positive factor with regard to hormone and prostatic "hypertrophy" development lies in the fact that castration early in life will prevent the development of so-called prostatic hypertrophy.

#### SUMMARY

1. Development of so-called prostatic hypertrophy usually passes through two phases: (a) aglandular, (b) glandular.
2. The aglandular or fibromuscular tumor probably is derived from a muscle cell, an anlage of the müllerian duct system.
3. The glandular portion of the tumor comes from the prostatic duct epithelium.
4. The aglandular nodule invites invasion by prostatic duct epithelium.
5. The epithelial tissues usually grow faster than the fibromuscular tissue so that the surgical specimen is mostly glandular.

6. The tissues of the posterior urethra which give rise to these tumors are sensitive to both male and female hormones.

7. Experimentally, the male hormone stimulates glandular tissue and the female hormone, fibromuscular tissue.

8. From the study of the development of prostatic "hypertrophy," one can not advocate the treatment of the full-grown lesion with either male or female hormone that is available today.

9. The only positive factor in the prevention of the development of prostatic "hypertrophy" is castration early in life or before the lesion begins.

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## DIAGNOSIS AND TREATMENT OF COMMON ANORECTAL CONDITIONS

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There is no accessible area in the body that receives so little attention as does the anorectal region. The cause for this is twofold. Patients who do not hesitate to present themselves for treatment of genital or urinary tract disorders, for some unaccountable reason, are reluctant to seek medical advice for anorectal complaints. This reluctance is often more than matched by the attitude of the medical attendant who too frequently attributes all complaints in this region to hemorrhoids and contents himself with prescribing some preparation with alleged or mythical qualities for alleviation of "piles." This neglect on the part of the medical profession is well evidenced by the prevalence of rectal advertisers whose interests in the patient are prompted more by economic than humanitarian motives.

### ANATOMIC CONSIDERATION

The anal canal directed upward and backward is only one and one half inches in length in the relaxed state and less than one inch in length when the sphincter is in normal contraction. The canal is lined with squamous epithelium extending from the skin margin to the mucocutaneous junction which is irregular or dentate in pattern forming the anal valves. The tips of the dentate margin are known as papillae and the pockets which are formed by the junction of the loose rectal mucosa with the depressed portion of the dentate margin are known as crypts. The anal canal, papillae and crypts are supplied richly with sensory nerves thus explaining the severe pain of pathologic conditions in this region. The point of union of the anal skin and rectal mucosa is known also as the white line of Hilton. It is superimposed in a circular band of fibrous tissue known as the pecten band

and marks the interval between the deep portion of the external sphincter muscle and the thickening of the lowermost circular fibers of the rectal musculature, the so-called internal sphincter. The lowermost fibers of the powerful levatores group of muscles forming the perineal diaphragm are in turn fused with the longitudinal musculature of the rectum in this area. The importance of the levator muscle in anorectal affection is due to the fact that it forms the medial wall of the ischio-rectal fossa. The branches of the internal hemorrhoidal vein (portal circulation) lie entirely above the white line and are covered with rectal mucosa which is insensitive. The external sphincter muscle lies directly under the skin and clothes the entire length of the anal canal. Its fibers are separated into three component parts described as subcutaneous, superficial and deep. The perianal vein surrounds the anal orifice lying in the subcutaneous tissues between the skin and the subcutaneous external sphincter muscle. The pigmented perianal skin, because it is loosely attached to the underlying tissues and thrown into folds, can become distended enormously from edema.

The transverse perineal nerves which are motor to the external sphincter muscles pass, from behind, forward to the midpoint of each half of the muscle. Therefore, subcutaneous injections for anesthesia should be made in the posterior quadrant and incision and drainage should be made only in the anterior quadrant.

### HISTORY

A careful history is of the utmost importance before attempting an examination of the anorectal region, for a great deal of information can be obtained from interrogation of the patient. The passage of bright red blood with the bowel movement but without pain suggests internal hemorrhoids. The presence of pain nearly always indicates that the lesion is limited to the anal canal. Conditions arising at a higher level cause vague discomfort but not actual pain since the rectum is not supplied by sensory nerves and, like the remainder of the intestinal canal, is sensitive only to distention or pulling on its mesentery.

Also, the scope of the examination indicated often may be obtained from the history, e. g., a history of passing blood and mucus, or blood and pus make proctoscopic examination mandatory, for these are the symptoms of malignancy or ulcerative colitis. If proctoscopic investigation should prove negative a barium enema must be given, for early diagnosis of both these conditions must be made if treatment is to be effective. The end results of untreated ulcerative colitis make it almost as formidable a condition as carcinoma.

### THE EXAMINATION OF THE PATIENT

*Equipment.*—A satisfactory examination of the anorectal region does not entail the use of elaborate equipment. A good light is essential but need not

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be elaborate; the ordinary office gooseneck light is sufficient. The room should be darkened by drawing the shades. Inspection of the anal canal is facilitated by the use of an anoscope supplied with either direct or indirect light. This and a short proctoscope are all the instruments necessary. A 10 cc. syringe and .5 per cent novocain should be available for occasional use.

*Position of the Patient.*—There can be little question but that the inverted position is the most satisfactory. Special rectal examination tables make the investigation easy but the knee-chest position is equally satisfactory. The knee-chest position is preferable to the knee elbow because of greater stability. Patients who cannot be put in the knee-chest position because of arthritis or feebleness may be examined in the lateral or Sims' position. The lithotomy position is relatively unsatisfactory because of the accompanying engorgement of the hemorrhoidal and perianal veins.

*Conduct of the Examination.*—The old adage that incorrect diagnoses are due 90 per cent to not looking and 10 per cent to not knowing is well exemplified in conditions affecting the anal region for there it is possible to visualize the whole length of the anal canal without the use of instruments.

There is a great deal more to a rectal examination than the insertion of a gloved finger into the anal canal and, yet, this maneuver passes for a rectal examination on many occasions. Most individuals with anorectal conditions have a spastic external sphincter muscle, thus, the passing of an examining finger through a tense anal canal often results in the patient's losing confidence because he is hurt and in the examiner's gaining little information of value. Five cc. of .5 per cent novocain solution injected into the external sphincter on each side of the anal orifice will permit examination without distress. This, however, is necessary only when dealing with an unusually sensitive or nervous patient.

Conduct the examination in a routine manner. First, inspect the perianal skin for evidence of pruritus ani, as shown by maceration and excoriation. Search for signs of a fistulous opening. While most fistulas have a well marked external opening or openings, it occasionally happens that the orifice is pinpoint and will escape casual scrutiny. Palpate the ischiorectal fossae for evidence of tenderness and induration suggesting an ischiorectal abscess or of scar tissue indicating previous inflammatory reactions. Examine the external skin tags and be certain that the external hemorrhoidal tag lying in the posterior commissure is not a sentinel pile indicating the presence of a fissure-in-ano. Gently evert the anal mucosa and if the maneuver is difficult or painful it usually means that one is dealing with a fissure-in-ano. When a fissure-in-ano or anal ulcer is present, digital or instrumental examination inflicts unnecessary pain on the patient since all the information can be obtained by everting the anal mucosa. If in these cases further

examinations are necessary, do not proceed without anesthetizing the anal canal by the injection of novocain. Test the tone of the external sphincter by gentle pressure with the index finger on the anterior commissure. If the sphincter muscle is spastic, suspect fissure, anal ulcer or cryptitis and papillitis. The sphincter should be relaxed by pressure on the anterior commissure before attempting digital examination, if one wishes to retain the confidence of his patient. Ask the patient to strain down so that the anal canal is threaded over the examining finger instead of forcing the finger through the canal. Adopt this same maneuver when passing the anoscope or proctoscope. This procedure will enable one to accomplish many digital examinations that would otherwise be unobtainable. Do not hope to gain much information by digital examination other than detecting low-lying carcinomata of the rectum or palpating enlarged anal papillae and polypi. Do not expect to palpate hemorrhoids unless they are thrombosed for hemorrhoids are only varicose veins and, being collapsible, cannot be felt.

When pain is the chief symptom, one can be reasonably certain that the involved area is in the anal canal. Spasticity of the external sphincter ani muscle is the hallmark of affections of this region. Investigation is simplified further by the realization that practically all the pathologic processes causing symptoms arise in the crypts.

The diagnosis of these various conditions depends primarily on complete visualization; and this can be attained only by anoscopic examination. Before inserting the anoscope, it is well to relax the external sphincter by applying firm pressure to the muscle in the anterior commissure and by gently insinuating the examining finger into the anal canal, at the same time exerting pressure on the levatores ani muscles since in their tonic state they present the greatest barrier to entering the rectum. These maneuvers then will permit the anoscope to enter the anal canal with ease. If the external sphincter muscle is spastic and digital examination provokes pain, inject 5 cc. of 1 per cent novocain solution into the external sphincter before attempting instrumentation.

*Consideration of the Commoner Affections.*—I will discuss briefly the common affections of the area. Carcinoma, lymphopathia venerea, ulcerative colitis, tuberculosis and prolapsus recti will be excluded because of the special problems they present.

#### EXTERNAL HEMORRHOIDS

So-called external hemorrhoids are really not hemorrhoids at all but common usage by both the laity and the profession has determined the continuation of this term. These perianal skin tags have little in common with internal hemorrhoids. Their structure is largely thickened skin and scar tissue with only a minimum of vascular tissue consisting of a small artery and a more or less oblit-

erated segment of the perianal vein, whereas, internal hemorrhoids are purely vascular tumors with only a minimum of supporting tissue and a thin covering of mucous membrane. Moreover, the vascular tissue of internal hemorrhoids is part of the portal venous system while the perianal vein involved in external hemorrhoids drains into the systemic venous channels. External hemorrhoids develop in three ways. The first is from treated or untreated localized thrombosis of the perianal vein, the so-called thrombosed external hemorrhoid. Rupture of a segment of the perianal vein usually occurs from straining at stool and varying amount of blood extravasates and clots. The loose perianal skin over the clot becomes edematous, adding to the size of the swelling. These clots usually bring the patient to the doctor because they are painful both at bowel movement and on locomotion. The diagnosis is simple since the blood clot is seen easily but treatment is often unsatisfactory because of misguided attempts at replacement of the swelling through the anal canal under the assumption that thrombosed internal hemorrhoids are present. Treatment consists of evacuation of the clot under local anesthesia followed by repeated Sitz baths and provision for insuring soft stools. Untreated, resolution gradually occurs with the laying down of fibrous tissue and persistence of a skin tag or external hemorrhoid.

The second method of formation is due to gradual stretching of the perianal skin from repeated prolapse of internal hemorrhoids. The perianal skin is drawn down in folds corresponding to the groups of internal hemorrhoids which prolapse so that the internal and external hemorrhoidal masses are confluent, thus presenting the common clinical finding of mixed hemorrhoids. A third and less common mode of origin is the edematous skin tag that forms at the lower limit of an anal fissure or ulcer, the so-called sentinel pile.

The treatment of external hemorrhoids is surgical removal. Ellipses of skin radiating out from the anal orifice and including the base of the skin tags should be removed. No attempt should be made to cover the defect by suturing the resulting skin margins since adequate drainage is necessary for sound healing. External hemorrhoids are not suitable for injections because, since they are not vascular, no benefit can accrue and sloughing is likely to occur.

#### INTERNAL HEMORRHOIDS

Internal hemorrhoids are simply varicosities of the terminal branches of the inferior hemorrhoidal veins. Usually three groups are present, left lateral, right anterior and right posterior, corresponding to branches of the vein. Supplementary smaller groups may be present in the anterior and posterior commissures.

Bleeding and not pain is the chief symptom of internal hemorrhoids. Three degrees of hemorrhoids are usually described: degree I, in which the hem-

orrhoidal masses are seen only on instrumental examination; degree II in which the hemorrhoids prolapse in straining but easily return to their former position and degree III in which the masses are prolapsed permanently. Pain is a rare symptom which occurs only with thrombosis secondary to strangulation of a prolapsed mass.

*Treatment.*—Degree I requires no treatment, unless bleeding, other than attention to bowel movement. Injections are satisfactory to control bleeding. Degree II in young patients may be relieved from prolapse and bleeding by injections. Older patients, however, usually require operation. Injection treatment should always be looked upon as a palliative measure which may require subsequent reinjection or operation. Degree III always should be operated upon because they are unsuitable for injection treatment. Degree II or degree III hemorrhoids always are complicated by the presence of external hemorrhoids. Much better results will attend operative intervention if the two types of hemorrhoids are treated separately. Deal first with the internal hemorrhoidal masses as though the external hemorrhoids were not present. Then, when the internal tissues have returned to their normal position, proceed with removal of the external skin tags. In this manner a much better plastic result may be obtained than when both masses are removed in one section.

#### PRURITUS ANI

This most distressing and intractable complaint is fortunately easy to recognize when the chief complaint is itching and, on inspection of the perianal skin, pigmentation, maceration and excoriation are found. In long-standing cases the normal folds of the skin may be accentuated and the deep furrows may be ulcerated. Almost any treatment, provided it is different from what the patient has been doing, will help for a time but permanent relief is difficult to obtain. There is almost always a nervous element present so that mild barbiturate sedation is indicated. The dermatitis itself should be treated by using cotton seed oil instead of soap and water for cleansing the perianal skin and the substitution of absorbent cotton for toilet paper. Calamine lotion and dusting powder reduce the discomfort but ointments should be avoided because they increase the maceration. These measures yield relief but usually more active treatment is necessary. Subcutaneous injection of normal saline gives results in some cases. Long-lasting local anesthetics such as diothane or procaine often will give welcome temporary relief to these harassed patients. These injections may be repeated at intervals and if the itching recurs injection of  $\frac{1}{2}$  cc. of 97 per cent alcohol, with the idea of destroying the perianal sensory nerve, may be necessary. Vaccine, roentgen ray, therapy and even sectioning of the sensory nerves have proved efficacious in certain stubborn cases. Local conditions in the anal canal, of course, may require

correction but usually anoscopic examination yields little of note.

#### INFECTION OF THE ANAL CANAL

*Cryptitis and Papillitis.*—Infection of the crypts is the commonest cause of rectal discomfort and it usually remains undiagnosed because the anal canal is not inspected. Acute cryptitis should be suspected when a patient complains of mild rectal discomfort accompanied by a constant desire to go to stool. The external sphincter is usually spastic and attempts at digital examination provoke so much pain that injection of novocain is necessary if the investigation is to be completed. Under direct vision a variable number of crypts are seen to be swollen and discharging pus. The papillae are edematous. Under a regime of Sitz baths, sedatives and suppositories, the acute phase usually subsides but evidence of the attack always persists in the enlarged and clinically edematous appearance of the papillae. Thus cryptitis and papillitis always coexist. These enlarged papillae may continue to elongate until they are extruded through the anal canal and become long enough to be designated as anal polyps. The infected crypt does not always resolve without complications. The external wall of the crypt may rupture into the anal canal forming one variety of anal ulcer which is very intractable. The infection may spread upward under the rectal mucosa forming a submucous abscess and leading to the condition of the so-called blind internal fistula. This abscess and fistula readily clear up following internal drainage.

*Pectenosis.*—Subacute infection in the crypts may cause increased fibrosis in the pecten band leading to the condition of pectenosis which may complicate any of the rectal infections. Failure to recognize and treat pectenosis is responsible for many poor results after otherwise adequate treatment for many of these conditions. Pectenosis is easy to recognize. Ordinarily, under anesthesia, the anal canal is quite distensible but when the pecten band is fibrosed the canal will barely admit two fingers. The obstruction may be recognized as being due to a tense band surrounding the upper limits of the canal and lying in the interval between the external and internal sphincter muscles. A clean incision with a sharp scalpel exactly in the midline posteriorly will sever this band, the white fibers of which then may be easily recognized.

*Fissure-in-Ano.*—The pain and distress produced by fissure-in-ano is out of all proportion to the size of the lesion. Fissures usually have their origin in a crypt either from spread of an abscess to the mucocutaneous junction or to the tearing open of a crypt wall by the passage of a hard fecal mass. In either instance healing is prevented by sphincteric movement and by edema of the skin margin. This swelling of the skin increases until a definite skin tag appears forming the so-called sentinel pile. The diagnosis of this condition is easy and can be made without discomfort to the patient.

Spasm of the sphincter is always present and this alone should lead the examiner to make a careful inspection of the posterior commissure. The finding of a sentinel pile will suggest the diagnosis which can be verified by gentle eversion of the mucosa to bring the fissure into view. On no account should digital or instrumental examination be attempted without the injection of a local anesthetic. The patient's discomfort may be alleviated by injection of one of the long-lasting local anesthetics but permanent relief is obtained only by operation. The secret of successful operation is the provision of adequate drainage by saucerization of the involved area, which means the removal of a generous wedge of skin and mucous membrane from the posterior commissure including the sentinel pile and base of the fissure. Infected crypts should be curetted, enlarged papillae should be excised and the pecten band should be incised if contracted.

*Ischiorectal Abscess.*—When the pus in an infected crypt erodes through the rectal wall, the ischiorectal space is invaded and an abscess results. Deep-seated pain is the first symptom and later on evidence of abscess formation presents itself in the pararectal tissues. Treatment consists of incision and drainage but this should not be delayed until the abscess points for early operation is the best protection against subsequent fistula formation. Care should be taken to open the abscess wall forward to avoid injury to the nerve supply of the external sphincter muscles. Patients should always be informed that the condition is likely to be followed by a fistula-in-ano, otherwise they may claim that the fistula was due to unskillful surgery. A fistulous tract does exist at the time the abscess is opened and some of them heal without further trouble, but the development of a fistula-in-ano is the rule rather than the exception.

*Fistula-in-Ano.*—An anal fistula always develops from an ischiorectal abscess. The tract is simply a contracted abscess cavity, thus accounting for its tortuosity. The internal opening is in a crypt and the external opening is where the abscess was excised or ruptured. Multiple external openings and tracts may exist but they always have a common internal opening which usually is close to the posterior commissure. The tract passes behind or through the fiber of the external sphincter; therefore, section of the sphincteric fibers external to the tract is essential to promote healing.

The treatment of fistula-in-ano is operative. When multiple tracts or openings exist, stage operations are indicated. At the first operation all the tracts should be reduced to one lying opposite the posterior commissure and, when healing has occurred, the single remaining fistula is dealt with in the usual manner. Fistulectomy implies excision of the fistulous tract plus section of the external sphincter muscle. Patients have a great horror of being incontinent after such a procedure. However, since only one half of the sphincter is, or should be, sectioned at one time, the worst that

could occur would be partial incontinence because at least one half of the sphincteric apparatus is left to function. Much of the hazard of cutting the sphincter can be removed by performing the operation in two stages. At the first sitting the fistulous tract is excised in its entirety and the external sphincter is denuded of its mucous and skin covering in the portion overlying the excised tract. One week later the muscle is incised under local anesthesia by which time edema of the tissues has fixed the muscle so that, after sectioning, the margins separate very little. Healing then occurs from the bottom of the tract up through and including the ends of the severed muscle. I have never seen incontinence develop when this method was used. Repeated packing of the tract is unnecessary for in addition to being painful it retards rather than promotes healing. A single hemostatic pack at the time of operation is all that is necessary for, if the operation is complete, further packing is unnecessary and, if incomplete, will accomplish little.

**Perianal Abscess.**—Abscesses developing in the subcutaneous tissues outside the anal orifice are known as perianal abscesses. They too can have their origin in an infected crypt when the pus tracks downward and, not erupting at the mucocutaneous junction as it does in the formation of a fissure-in-ano, continues out under the skin to develop in the subcutaneous tissues of the perianal folds. Perianal abscesses may develop also from injury and infected hair follicles. They are recognized easily and usually heal readily after incision and drainage.

**Anal Sinus.**—Sometimes a perianal abscess develops a secondary opening at the mucocutaneous junction and healing does not occur because of the development of a sinus. The tract is superficial to the external sphincter and so its cure presents no problem. Occasionally the picture may be obscured by the sinus tract passing through the base of a skin tag or external hemorrhoid. Treatment consists of excision of the tract and surrounding redundant skin.

#### SUMMARY AND CONCLUSIONS

1. Anorectal conditions often are neglected because the patient's hesitancy to consult his medical adviser often is matched by the physician's reluctance to make a satisfactory examination.

2. The usual handling of rectal cases confirms the old adage that mistakes are due 10 per cent to not knowing and 90 per cent to not looking.

3. The most serious error is due to failure to make a thorough digital examination. It has been established that 25 per cent of patients with carcinoma of the rectum palpable in a digital examination recently had been subjected to hemorrhoidectomy.

4. Failure to recognize and treat pectenosis is responsible for many of the failures following ano-rectal operations.

5. Patients suffering from ischiorectal abscess

always should be informed of the likelihood of the development of fistula-in-ano.

6. Internal and external hemorrhoids are treated best as separate entities.

7. The two stage operation for fistula-in-ano best preserves the external sphincteric apparatus.

Henry Ford Hospital.

## CASE REPORTS

### OSTEOGENIC SARCOMA OF THE STERNUM

SURGICAL REMOVAL FOLLOWED BY ROENTGEN

RAY THERAPY

REPORT OF A CASE

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Primary tumors of the sternum are relatively rare and it is for this reason that I wish to report this case.

Christenson<sup>1</sup> in 1925 reported the comparative locations of 1,000 bone tumors; two malignant tumors occurred in the sternum. Heuer<sup>2</sup> in 1932 reviewed the literature on tumors of the sternum. He summarized a series of thirty-seven cases dating from 1878 to 1932 and reported his own additional case of chondromyxoma. Of these thirty-eight cases 50 per cent were primary sarcomata. Roberg<sup>3</sup> in 1935 reported a case of chondroma, with partial transition to sarcoma, in a woman aged 39 years. Two operations were performed on this patient seven months apart. The patient was seen eight months after the last operation and roentgen ray evidence revealed no recurrence.

In 1936 Crile<sup>4</sup> reported four pulsating tumors of the sternum and reported that up to that time sixteen tumors of the sternum had been seen at the Cleveland Clinic: five primary sarcomata, four metastases from carcinomata of the breast, four metastases from malignant adenomata of the thyroid, one cavernous hemangioma, one chondroma and one hypernephroma.

Roth and Davidson<sup>5</sup> in 1937 reported a case of pulsating metastatic hypernephroma of the sternum. In this article they brought out that pulsating neoplasms of the sternum were usually secondary to hypernephroma or to malignant adenomata of the thyroid.

In 1940 Bradshaw and Chodoff<sup>6</sup> reported a case of chondrosarcoma of the sternum in a woman aged 49 years in which the mass was in the upper end of the sternum. In the operation this part of the sternum and the inner ends of both clavicles were removed en bloc with a Gigli saw.

In discussing osteogenic sarcoma, Pack and Liv-

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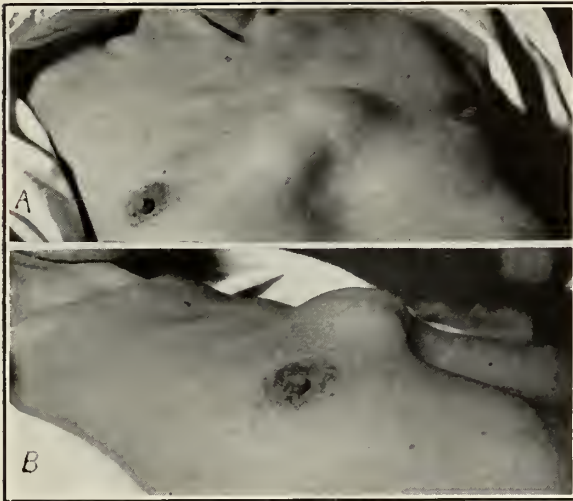


Fig. 1. A. Anterior view of the sternal mass. B. Anterior-lateral view of the sternal mass.

ingston<sup>7</sup> state that the femur is the most frequently affected bone, the next being the humerus and tibia. Osteogenic sarcoma is primarily a tumor of childhood and young adult life. It may occur at any age but is far less common in persons past the age of 40.

Ewing<sup>8</sup> states that the atypical form of osteogenic sarcoma may be encountered in almost any portion of any bone in the body. The following case may be placed under this category.

#### REPORT OF CASE

White male, aged 54, was admitted to the hospital on October 22, 1940, with an admission diagnosis of syphilitic aneurysm. His chief complaints were belching, flatulence, difficult breathing and severe drawing pain in the epigastrium.

He stated that he had noticed an enlargement on the front of his chest approximately nine months previously and thought he had asthma and started taking ephedrine and amylal. He continued to take these until his admission. He had some dyspnea while lying down and this did not increase when he walked. After his entrance he complained of considerable pain in the lower chest, especially in the region of a mass in the anterior chest wall. He could not take a deep breath and could not lie down flat on the bed due to respiratory difficulty.



Fig. 2. Anterior view of chest after healing showing T shaped incision. Lines show port for roentgen ray therapy.



Fig. 3. Gross specimen showing mass removed, costal cartilages and parts of ribs.

His past history revealed no previous trauma to the anterior chest wall. He had been treated for syphilis at the syphilitic clinic for two eighteen month series starting in 1936. He gave no history of a primary lesion but presented definite secondary lesions.

Upon physical examination the patient appeared as a cooperative, well developed and well nourished white male. He was in no distress at the time of the examination.

His eyes reacted slowly to light. His teeth were in poor condition. The heart revealed no murmurs or thrills; its dullness was enlarged slightly to the left and downward. The lungs revealed no rales nor abnormal percussion notes.

On the lower part of the sternum was a definite mass measuring 3 by 5 inches lying transverse to the sternum. Its contour was oval and it protruded approximately 2 inches. It was hard, immovable and not tender. The color of its overlying skin was normal (fig. 1). The abdomen and extremities were normal.

The ophthalmology department consultant made a diagnosis of optic neuritis, possibly of syphilitic origin.

Laboratory tests revealed the following: white blood cells, 10,850; hemoglobin, 84 per cent (13 gms.); blood chemistry, normal; blood Wassermann and Kahn, four plus; spinal fluid Wassermann, negative; colloidal gold, 000000000; urine, normal.

Roentgen ray examination of the chest revealed a soft tissue tumor mass within the margin of the gladiolus of the sternum (fig. 5). Two small nodular areas of density in the lower right chest also were seen, suggesting metastatic neoplasm. Roentgen ray after using

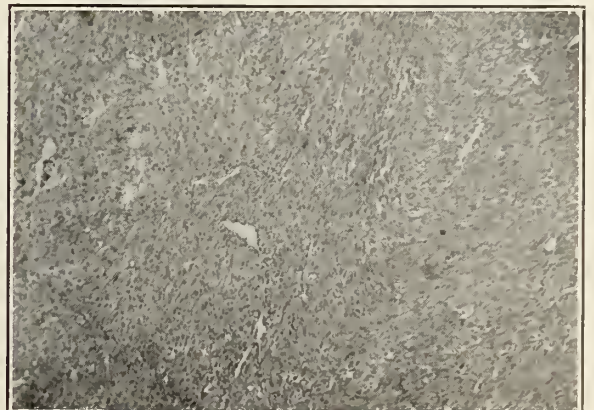


Fig. 4. Photomicrograph of tumor tissue. Diagnosis: osteogenic sarcoma.



Fig. 5. Roentgenogram of lateral view of the sternum before operation.

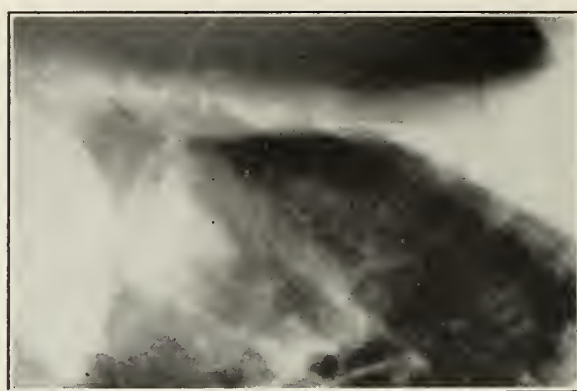


Fig. 6. Roentgenogram of lateral view of sternal region after operation.

barium meal revealed a normal gastrointestinal tract. Roentgen ray examination of the skull, spine and pelvis revealed no metastatic involvement.

The electrocardiograph was not abnormal.

November 9, 1940. A biopsy of the mass was taken and the pathology department reported osteogenic sarcoma (fig. 4).

November 16. The patient was transferred to the Tumor and Cancer Service for treatment. The treatment consisted of general supportive measures, betalin and cevitamic acid by mouth, bismuth in oil intramuscularly and saturated solution of potassium iodide by mouth. His general condition improved but he still complained of considerable pain and a drawing sensation in the front of the lower chest and he could not lie down flat.

November 25. The patient was operated upon, under general cyclopropane anesthetic, by Dr. W. W. Buckingham. A T-shaped incision (fig. 2) was made over the mass and the skin flaps reflected laterally. The whole mass and the sternal attachments of the surrounding ribs (fig. 3) were removed. All except approximately two inches of the superior part of the sternum was removed. The growth was found to be protruding inwardly almost as much as it did outwardly. It was slightly necrotic in the central portion. All the tissue was removed down to the pericardium. The wound was closed with a Penrose drain in the lower part. A tight binding bandage was applied and the immediate postoperative condition was good.

At 4:00 p. m. he was given 500 cc. of whole blood intravenously. His general condition became worse and he went into shock. He was given immediate treatment consisting of a much tighter binder, intravenous fluids, nasal oxygen, adrenalin and coramine. The foot of the bed was elevated.

He responded rather slowly to this treatment and remained in poor condition until about 12 o'clock that night. The intravenous fluids were continued the next day and he was given coramine, 1.5 cc. every one to two hours until the following afternoon. His general condition steadily improved and other than this adverse postoperative period his recovery was uneventful and the incision healed nicely.

Antisiphilitic treatment was continued. The staff decided that roentgen ray therapy should be given through a port over the area from which the mass was removed. He was given 3,250 roentgens, receiving 125 roentgens per day, using a port 10 by 15 cm. with 165 kilovolts,  $\frac{1}{4}$  millicurie of copper, 1 millimeter of aluminum, 25 milliamperes at 70 cm. distance.

December 21. The patient was released from the hospital feeling fine and having no complaints. He continued his roentgen ray treatments as an outpatient.

January 14, 1941. Patient returned to the Tumor Clinic feeling fine and had no complaints except some burning sensation over the area treated with roentgen ray. He was to return to the clinic in six weeks.

March 25. Patient was seen in the Tumor Clinic. His general condition definitely was improved and he had gained 20 pounds. Roentgen ray of the chest revealed evidence of considerable metastatic involvement of both lung fields.

June 10. Patient was seen in the Tumor Clinic and complained of pain in the middle of the chest. He was placed on codeine and aspirin.

#### SUMMARY

1. A brief resume of the literature on tumors of the sternum is given.
2. One case of osteogenic sarcoma of the sternum, including surgery and roentgen ray therapy, is reported.
3. Follow-up reports on the case as the patient returned to the Tumor Clinic are given.

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Treatment with sulfathiazole, a derivative of sulfanilamide, of infants with acute diarrhea and dysentery, hastens the disappearance of the dysentery organisms *Shigella paradysenteriae* from the stools, Merlin L. Cooper, M.D.; Ralph L. Zucker, M.D., and Stewart Wagoner, M.D., Cincinnati, report in *The Journal of the American Medical Association* for November 1.

They found that 1 of 17 patients treated with sulfathiazole still had a positive stool culture when discharged from the hospital as compared with 17 of 34 patients who were treated by other means.

# ACUTE HEMORRHAGIC PANCREATITIS WITHOUT THE USUAL CLINICAL SYMPTOMS

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AND

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This case of acute hemorrhagic pancreatitis is being reported because of the unusual clinical picture. Severe pain, shock and abdominal rigidity were not present.

Dinsmore and Nosick<sup>1</sup> in a recent article write, "In any consideration of acute pancreatitis the most singular and universal symptom is pain. The onset of the pain is characteristically sudden and is described in the superlative. . . ." They tabulated the seventeen most recent cases of pancreatitis at the Cleveland Clinic in regard to the type and location of pain.

Moynihan<sup>2</sup> in his textbook on abdominal operations states in regard to acute pancreatitis, ". . . pain is the most severe type of any resulting from abdominal disease and is attended with the most profound collapse." Whipple<sup>3</sup> in Cecil's textbook on medicine states, "In the hemorrhagic and diffuse suppurative types, the onset which is sudden is characterized by agonizing and constant pain in the epigastrium or about the umbilicus, with severe nausea, vomiting and symptoms of collapse."

Pratt<sup>4</sup> in a recent article states, "The first and most important symptom of acute pancreatic necrosis is pain, severe, often agonizing, not colicky, but continuous, and usually unrelieved by morphine." Dieulafoy cited by Pratt states, "Pancreatitis should be considered in an obese person of middle age addicted to alcohol and with a history suggesting cholelithiasis, who is suddenly seized after a heavy meal with agonizing pain in the epigastrium, which cannot be relieved by morphine, and accompanied by vomiting and followed by collapse."

George K. Rhodes in his discussion of Larson's<sup>5</sup> paper states that "one of the most common findings is that these patients with acute pancreatitis present the clinical picture of true surgical shock. We do not find this condition of shock in the early stages of any other acute abdominal condition."

We found one case reported in which there was no nausea, vomiting or collapse, but in which the abdominal pain was quite severe and rigidity was marked. This was reported by Butler and Delprat<sup>6</sup> in a young man whose symptoms followed a twenty-four-hour automobile ride. Operation revealed a hemorrhage in the tail of the pancreas and one small area of fat necrosis in the omentum.

The following is an abstract of the history and autopsy report of our case.

## REPORT OF CASE

E. O. White male, single, aged 41, born in Switzerland, a waiter, was first seen on February 19, 1940, at his home. His chief complaint was vomiting for the last twenty-four hours. He gave a history of a cough for several days and of feeling cold about midnight on February 19, 1940. Thinking that he was "catching a cold," he took three drinks of whiskey and went to bed. Some time later he awakened with a feeling of fullness in the epigastrium; his abdomen was distended and shortly he began to vomit and the vomiting persisted. At various times he drank some hot milk and chicken broth which he vomited. He had no pain at any time; he stated his bowels had not moved for three days.

*Past History.*—Patient had always been in good health; had not lost a day's work in eighteen years. There had been no loss of weight. There was no history of food intolerance, no indigestion; his appetite had always been good. He took an occasional drink but never drank to excess. He had had gonorrhea in 1935. He smoked moderately.

*Family History.*—His family history was normal.

*Physical Examination.*—Examination before admission to the hospital revealed a well developed and well nourished male, somewhat ill but without evidence of shock. He was alert and cooperative. He vomited once or twice during the examination. Head and neck were normal. There was no general glandular enlargement. Thyroid was not palpable. Heart and lungs were normal. Pulse rate was 130; blood pressure was 130/100. The abdomen was round and distended and was tympanitic throughout. There was slight generalized muscle spasm. No organs or masses were palpable. Rectal palpation gave normal findings. There was no edema of the ankles. Pedal pulses were palpable and of good quality. Reflexes were normal. No pathologic toe signs were elicited. Temperature was 100.2 F. Patient was referred to the hospital with provisional diagnosis of high intestinal obstruction.

When he entered the hospital two hours later, there was little change in the physical findings and no change in the symptoms. The only complaint was vomiting. Temperature was 101 F. and pulse 100. The vomitus was reddish brown in color with no fecal odor. Patient was quite alert. There was no evidence of shock. Flat film of the abdomen taken with the patient in standing position revealed some gas in the large bowel and none in the small bowel. There was no cascading and no fluid levels. The urine was clear with 2 per cent sugar, 1 plus albumin, no acetone, occasional white blood cell and granular cast. White blood count was 19,000 with a left shift.

At 1 p. m. the patient was given a magnesium sulfate and glycerin enema with some relief of the distention and some stool was passed. Nasal tube with suction was used to relieve vomiting. Following this the patient stated that he felt some better.

At 2:30 p. m., Dr. Clarence Eckert stated in consultation, "Patient's history rather unusual, vomiting, constipation of short duration and abdominal fullness being the pertinent symptoms. Abdomen slightly distended by possible gas in the entire colon. Only slight tenderness in the left lower quadrant. No rebound pain. Rectal negative. Since enema patient is more comfortable. Diagnosis is uncertain at this time. Think patient's condition warrants further observation."

At 3:00 p. m. patient's abdomen seemed more rigid and distention was increased. White count was 14,000 with 2 per cent juveniles, 20 per cent stab, 72 per cent segments and 6 per cent lymphocytes. Second roentgen ray film of abdomen showed no evident change.

At 4:00 p. m. white count again was 19,000. Patient stated that he definitely felt much better than in the morning. Temperature was 102 F., respiration 40, pulse quite rapid. About 4:30 p. m. the patient's condition

Presented at the weekly clinical-pathologic conference of the Jewish Hospital, St. Louis, February 14, 1941.

seemed about the same with some tenderness being elicited in the right lower quadrant and a diagnosis of an acute appendix was considered. The entire lack of pain at any time seemed to exclude a perforative or inflammatory lesion. Acute pancreatitis was considered improbable because of absence of pain and shock. It was decided to operate believing there was some abdominal emergency, possibly a high ileus.

At 5:30 p. m. Dr. Eckert operated. About 300 cc. of brownish (bloody) thin serous fluid was found in the abdomen. There was no distention of the bowel. The omentum covered the entire abdomen and in many places was thick, as much as 4 or 6 cm. in parts. This thickened omentum was adherent to lesser and greater curvatures of the stomach, which at first suggested perforation at these sites. Later examination showed the stomach wall to be normal. The entire omentum showed white discrete spots of fat necrosis. The spots varied in shape and were from 2 to 4 mm. in size, were soft and had no area of reaction around them. These same spots were found high in the mesentery of the small intestine. The liver was from 2 to 3 cm. below the costal margin, edges were round and the entire liver was of a pale orange color with the consistency somewhat softer than normal. In the region of the head of the pancreas was a hard mass about the size of a small grapefruit. This was tense, especially in the curve of the duodenum where the tenseness could be more easily palpated. The mass had a reddish brown color and seemed to consist of two or three cysts. The mass could be raised by inserting the finger through two openings into pancreatic tissue. The abdomen was closed after taking a biopsy from the omentum. The patient was returned to his room in poor condition. Pulse gradually rose to 150 per minute, respiration to 40 and temperature to 105 F. Patient died the following morning about fourteen hours after operation. Culture of the abdominal fluid revealed no growth.

The patient's postmortem blood diastase was 1,545 and urine diastase was 9,000 (Somogyi method). The autopsy was done by Dr. S. H. Gray about an hour following death. On opening the abdomen the peritoneal cavity contained a moderate amount of sero-sanguinous fluid. Scattered throughout the omentum and in numerous areas beneath the visceral and parietal peritoneum and also in the retroperitoneal fat were numerous small chalk white areas about 2 mm. in diameter. These were also seen on the undersurface of the diaphragm. The pleural cavities contained no fluid or adhesions and the surfaces were smooth and glistening. A few small, white areas, similar to those found in the abdomen, were seen on the pleural surface of the left leaf of the diaphragm. The pericardial cavity was normal. The heart appeared normal. The aorta was normal except for minimal atheromatous changes in the abdominal portion. The lungs showed several large areas of marginal atelectasis on the left upper and the right upper and lower lobes and a few patchy areas of bronchopneumonia. The gastrointestinal tract appeared normal. The liver was enlarged about one and a half times and had a tawny brown color. Several pale areas were seen on the surface. It was rather pale on cut section and was greasy to the touch. Microscopic section showed a diffuse and extreme fatty degeneration which had destroyed completely the arrangement of the liver cells so that columns could not be distinguished. There was a moderate lymphocytic infiltration around some of the portal islands.

The gallbladder showed some fragmentation of the mucosa which was thrown into folds and in some places was papillomatous. It also showed some fatty infiltration of the subserous layer. Throughout all layers there was a moderate small round cell infiltration. The spleen was normal.

The pancreas was enlarged about three times its normal size, quite firm in consistency and dark red in color. On cut section the normal architecture was ob-

literated by areas of hemorrhage and necrosis involving the entire organ. The pancreatic duct was dissected out and no evidence of obstruction was found although it could not be completely traced to the ampulla. No opening into the common duct was found. On microscopic section many areas of necrosis and hemorrhagic material were found scattered throughout the organ. In the hemorrhagic areas there were many large round phagocytic cells. In other areas there was an outpouring of fibrin and polymorphonuclear leukocytes. The fat bordering the organ showed an extensive amount of fat necrosis.

The adrenals were normal except for some fatty infiltration.

The kidneys showed passive congestion and a rare hyalinized glomerulus was seen. Prostate was normal.

The pathologic diagnosis was (1) acute hemorrhagic pancreatitis, (2) fat necrosis involving peritoneum, pleura and undersurface of the diaphragm, (3) bronchopneumonia, (4) fatty liver and (5) chronic cholecystitis.

#### CONCLUSION

A case of acute hemorrhagic pancreatitis is reported in which the cardinal symptoms of pain, shock and abdominal rigidity were absent and which, on postmortem examination, showed an extensive hemorrhagic pancreatitis with numerous and far reaching areas of fat necrosis.

603 Metropolitan Building.

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#### SAY SURGERY GIVES BEST RESULTS IN TREATING HIGH BLOOD PRESSURE

The outlook for patients with a high level of blood pressure (hypertension) and spasmodic contractions of the minute blood vessels of the eye is much more favorable following an operation in which certain nerves controlling the contraction and dilation of the blood vessels are severed than is the outlook following medical treatment, Ward Wilson Woods, M.D., and Max Minor Peet, M.D., Ann Arbor, Mich., report in *The Journal of the American Medical Association* for November 1.

"The surgical treatment of patients with malignant hypertension has resulted in a survival of 33 per cent after five years," the two surgeons add, "whereas following medical treatment . . . the mortality was more than 99 per cent."

Their findings are based on a comparison of the results of the nerve severance operation in 76 patients with those reported by two other physicians from medical treatment of 219 patients with the same condition. The surgical group were followed for from five to seven years after the operation and the medically treated group were followed from five to nine years. The discrepancy between the length of the two studies does not obviate relatively accurate comparison, the two surgeons say, because the time span of the medical group is calculated from the time of the first observation of the patient whereas in the surgical group it is calculated from the time of operation.

# THE JOURNAL

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DECEMBER, 1941

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## EDITORIALS

### EYE HAZARDS IN INDUSTRY

Ninety-eight per cent of the eye injuries which occur in American industries at the rate of 1,000 a day representing an annual loss of \$200,000,000, are wholly unnecessary, according to a study sponsored by the National Society for the Prevention of Blindness and released recently by the Columbia University Press. The study was prepared by the late Louis Resnick, staff member of the Society for twenty years, and is based upon two decades of personal observation in industries throughout the country. It contains a complete summary of eye hazards existing in American industry today and reports on measures that may be taken to eliminate these hazards and to guard workers against those which cannot be eliminated.

Approximately 300,000 eye injuries occur in this country's factories, mills, mines and workshops every year, the study explains, and cost the employers more than \$100,000,000 annually. They cost the injured workmen and the communities in which they live an additional \$100,000,000 yearly. Most of this \$200,000,000 annual loss and most of the human suffering resulting from these eye injuries—98 per cent in the opinion of those who have made the most detailed study of the subject—are wholly unnecessary, the study reports. Of the 1,000 eye injuries which occur daily, all but twenty could be prevented. Conditions observed during the last twenty years lead inevitably to the conviction that accidents are not inherent in industry and that the dividends on investments in accident prevention may be proportionately greater than the dividends on the primary business of an industry.

There are in the United States today more than 80,000 persons who have lost the sight of one eye as a result of industrial hazards and close to 8,000 who have lost permanently the sight of both eyes as a result of these accidents.

It is estimated that 300,000 eye injuries occur in American industry each year, of which 60,000 are compensable, and cost the employers more than

\$20,000,000 annually for compensation and medical care. There are approximately 26,880 workers idle each day because of eye injuries and more than 53,000,000 man hours of work are lost yearly.

The report states, "Little progress has been made in bringing to workmen a realization of what accidents cost them in lowered earning capacity and of the money saving they can make by doing their part in safeguarding their eyes. Few workmen, for example, realize that the maximum compensation for total loss of vision of one eye is less than \$2,000 in most states and as low as \$1,000 in some. The maximum compensation payable for loss of sight of both eyes in a majority of states is \$6,000 or less. In the most liberal states the maximum compensation paid for total loss of vision is two thirds of the wage received by the injured workman at the time of the accident. In some states the maximum compensation for total loss of vision is as low as \$30.00 a month for life."

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### PROCUREMENT AND ASSIGNMENT SERVICE FOR PHYSICIANS, DENTISTS AND VETERINARIANS

The Functions of the new Procurement and Assignment Service for Physicians, Dentists and Veterinarians, just created by the President as a part of the Office of Defense, Health and Welfare Services, are outlined in an editorial in *The Journal of the American Medical Association* for November 8. The scope of the problems confronting the new agency also is presented in the same issue of *The Journal* in an analysis of the nation's physician requirements which reveals that, even without any sudden expansion of the Army, between 2,000 and 3,000 physicians will be needed by various governmental agencies during the next year. The seriousness of this situation is evidenced in that the approximately 5,000 physicians who are graduated by medical schools each year are barely sufficient to replace the number who die annually.

*The Journal's* editorial points out that: "One of the most significant actions taken by the House of Delegates at the annual session of the American Medical Association held in Cleveland in June was its approval of a resolution introduced by the Committee on Medical Preparedness urging that the United States Government establish an agency for the procurement and assignment of physicians to meet the many needs arising out of the emergency in which the nation finds itself.

"On Friday, October 31, the President of the United States approved an order establishing a Procurement and Assignment Service for Physicians, Dentists and Veterinarians as a part of the Office of Defense, Health and Welfare Services under the direction of Mr. Paul V. McNutt to stimulate voluntary enrollment of these professions. The resolution of the House of Delegates also urged that this agency be under the direction of repre-

sentatives of the civilian medical profession. The President has appointed as a board to administer the new service the following members: Chairman, Dr. Frank H. Lahey, President of the American Medical Association; Dr. Harold S. Diehl, dean of the medical school of the University of Minnesota and a member of the Education Committee of the Health and Medical Committee; Dr. James E. Paulin, who is retiring president of the American College of Physicians and chairman of the Council on Scientific Assembly of the American Medical Association and also a member of the Committee on Medical Preparedness; Dr. Harvey B. Stone, a member of the House of Delegates of the American Medical Association, of the Committee on Medical Preparedness and of the Council on Medical Education and Hospitals, and Dr. Caleb Willard Camaller, Jr., Washington, D. C., a past president of the American Dental Association and a member of its Committee on Medical Preparedness.

"The functions of the agency now established include primarily the procurement of personnel from existing qualified members of the professions concerned. It is proposed that various governmental and other agencies requiring professional personnel for needs related to the emergency shall send their requests to the Procurement and Assignment Service indicating the number of men desired, the time during which they must be secured, and the qualifications and limitations placed on such personnel. The Service then by appropriate mechanism may arrange to secure lists of professional personnel available to meet these requirements, utilizing existing rosters such as the one now available in the headquarters of the American Medical Association and of the American Dental Association, or other public and private rosters which it may consider acceptable. The agency also is authorized to approach such professional personnel as are considered to be available and to use suitable means to stimulate voluntary enrollment. Emphasis should be placed on the fact that voluntary enrollment is desired and that modern means of procurement will be utilized. Already the states and many of the counties of the United States have been organized for military medical preparedness through the Committee on Medical Preparedness of the American Medical Association. Thus it becomes possible to determine availability of various physicians and their qualifications for special services. Obviously it is possible also in this way to protect the civilian needs of American communities.

"In its work the Procurement and Assignment Service is authorized to procure an executive secretary who shall serve as executive officer and who is to be a full time appointee with a salary. The members of the board which administers the agency are to serve, as does the Health and Medical Committee, whose organization it parallels, without salary. The board is authorized to secure such necessary assistants as may be required, to

establish advisory committees and subcommittees representing the various interests which may be concerned, to develop suitable liaison with governmental and private agencies, to establish suboffices if they are required, and indeed to do almost everything short of compulsion, that may be useful in supplying the Army, the Navy, the Public Health Service, essential industries and the civilian population with necessary professional personnel.

"Recently *The Journal* called attention to the problem created by failure of junior and senior medical students and of interns to avail themselves of the opportunities offered by the Army and Navy medical departments to become enrolled in official agencies which would make them available when called as commissioned medical officers. No doubt the new Procurement and Assignment Service will give special consideration to this phase of the problem. From the reservoir of young physicians coming into the practice of medicine must be obtained the majority of those needed for replacement of physicians now in service as members of the reserve corps. Should there be a sudden large expansion of our army, the number of physicians needed might approach ten thousand or more. The securing of these men could be brought about without jeopardizing the health of the nation by utilizing the complete cooperation of the medical profession."

In the Medical Preparedness Section of the same issue of *The Journal* appears an analysis of the present situation as regards the supply of physicians in the present emergency. Pointing out that the officers in the Medical Department of the Army today include 11,465 physicians in the Medical Corps, of whom 8,983 are reserve officers, 1,250 regular officers and 1,232 National Guard officers, *The Journal* says that "there is at present a shortage of 1,473 medical officers. . . . Should the Army not be greatly expanded within the next year but continue with a training program of about the present scope, a maximum of approximately 3,200 replacements would be required each year for the next five years during the period of the Selective Service Act. It is estimated that approximately two thirds of the physicians now in service would elect to remain for the period of the emergency. If, however, it should not be possible to retain these men in service, the number needed for replacement would be considerably expanded."

In the Navy approximately 100 physicians are required at the present time as replacements and it appears that with the expansion now in prospect another 700 would be required by next July. To meet this need the Navy has a pool of 1,000 in its Reserve Corps. The calling up of these men obviously would reduce the number of physicians available for civilian and nonmilitary needs.

The United States Public Health Service requires about 35 new officers each year to meet its normal requirements for replacements, but in view of the present expanded activities approximately 100 interns in public health service institutions will be

required within the next year. In addition, state health departments require about 150 additional physicians to meet new expansions.

The United States Veterans Bureau now has about 1,800 physicians in full time positions, about 500 of whom are in the United States Army Medical Reserve Corps. These 500 will require replacement if they resign their commissions in the Reserve Corps or if they elect to accept active duty with the Army.

The various federal agencies provided physicians by the Civil Service Commission employ about 2,500 doctors and need about 400 new men for replacements or for new positions each year. For the present fiscal year they lack 250 physicians to meet their requirements.

It is also pointed out in the analysis that the approximately 5,000 physicians graduated from medical schools of the United States each year are about the number needed to supply the hospitals capable of extending the education of the young physician by an internship with the interns that they require. Many smaller hospitals now are finding it difficult if not impossible to secure interns.

In addition to the demands made on the medical profession by the various governmental services there also is the necessity for some service related to civilian defense, to the Selective Service and to expanded war industries.

## NEWS NOTES

Dr. John M. Rumsey, Kansas City, was the guest of the Clay County (Kansas) Medical Society at Clay Center, Kansas, on November 12 and spoke on "Gallbladder Disease."

Dr. H. E. Carlson, Kansas City, was a guest of the Johnson County (Kansas) Medical Society at Olathe, Kansas, October 13 and spoke on "Diagnostic Problems in Urology."

Drs. Andy Hall, R. A. Kinsella, F. V. Emmert, F. A. Jostes and R. H. Milligan, St. Louis, were guests of the Southern Illinois Medical Association at Murphysboro, Illinois, on November 6.

The Committee on Conservation of Eyesight will be glad to furnish, for distribution to patients, supplies of the pamphlet on conservation of eyesight which was prepared by the Committee for the information of the laity.

Dr. W. Byron Black, Kansas City, was elected secretary-treasurer of the American Association of Eye, Ear, Nose and Throat Allergists which was organized at the meeting of the American Academy of Ophthalmology and Otolaryngology in Omaha, October 19 to 23.

Dr. W. E. Keith, Kansas City, has been elected regional director of the American Association of Eye, Ear, Nose and Throat Secretaries.

Dr. August A. Werner, St. Louis, was a guest of the Caddo County (Louisiana) Medical Society and the Fourth Councilor District of the Louisiana State Medical Society at Shreveport, Louisiana, on October 7 and spoke on "The Effect of the Ductless Glands on Growth and Development."

Scientific exhibits will be stressed at the 1942 Annual Session of the Missouri State Medical Association to be held in Kansas City, April 27, 28 and 29, 1942. Members wishing to present exhibits should contact Dr. Ralph R. Coffey, 1324 Professional Building, Kansas City, member of the Committee on Scientific Work in charge of scientific exhibits.

The regular hospital staff meeting of the Station Hospital, Fort Leonard Wood, was held at 6:30 p. m., November 6, in Hospital Building B-4, following a dinner at 5:30 p. m. The program consisted of presentations of clinical cases from the following sections: Dermatology, Major Donald J. Wilson, M.C.; General Surgery, Lt. Lester Shupe, M.C.; Neuropsychiatry, Lt. Ellsworth Trowbridge, M.S.; Proctology, Lt. Ronald F. Elkins, M.C.; General Medicine, Lt. Ingall H. Neas, M.C.; Thoracic Surgery, Capt. Lyman K. Richardson, M.C.

The fifth interstate Neuropsychiatric Institute will be held at State Hospital No. 2, St. Joseph, March 22 to April 4, 1942. The institute will be conducted under the sponsorship of the American Psychiatric Association through its committee on psychiatry and medical education and financed in part by a grant from the Rockefeller Foundation. Lectures will be presented on neuro-anatomy, neuropathology, psychobiology, psychotherapy, neuroroentgenology, neurosurgery and electroencephalography as well as presentations of clinical psychiatric and neurologic problems and related subjects.

St. Louis physicians presented the following program at a meeting of the Southern Interurban Gynecological and Obstetrical Club in St. Louis, November 10: "Iliac Lymphadenectomy in Carcinoma of the Cervix," motion picture, Dr. F. J. Tausig; "Treatment of Puerperal Infection," Dr. T. K. Brown; "Ruptured Uterus," Dr. Otto Schwarz; "Treatment of Placenta Previa," Dr. G. D. Royston; "Pelvic Endocrinology," Dr. Willard Allen; "Placenta Accreta," Dr. E. Lee Dorsett; "Double Uterus," Dr. J. A. Hardy; "Prenatal Syphilis," Dr. E. T. Huber; "Gonorrhea and Treatment With Sulfathiazole," Dr. Paul Fletcher; "Gonorrheal Treatment With Sulfathiazole," Dr. Dudley Smith. Dr. John L. McKelvey, Minneapolis, spoke at a dinner meeting.

House Bill No. 201, passed by the 61st General Assembly, requires every person licensed to practice medicine and surgery in the State of Missouri to register biennially with the State Board of Health. Application cards are being sent to physicians by the State Board of Health and on return of the card the Board will issue the certificate certifying the physician's registration.

The American Urological Association offers an annual award "not to exceed \$500.00" for an essay, or essays, on the result of some specific clinical or laboratory research in urology. The amount of the prize is based on the merit of the work represented and if the committee on scientific research deems none of the offerings worthy, no award will be made. Competitors are limited to residents in urology in recognized hospitals and to urologists who have been in the specific practice of urology for not more than five years. Essays should be in the hands of the secretary, Dr. Clyde L. Deming, 789 Howard Avenue, New Haven, Connecticut, on or before April 1, 1942.

## MISCELLANY

### EMERGENCY MEDICAL SERVICE FOR CIVILIAN DEFENSE

The Medical Division of the United States Office of Civilian Defense, Washington, D. C., has issued further information on plans for civilian defense, "Duties of the Local Chief of Emergency Medical Services." The bulletin is reprinted that physicians may be advised of this work.

#### Duties of the Local Chief of Emergency Medical Services

In order to expedite the organization of the Emergency Medical Services and provide for their effective administration, it is important that each local Civilian Defense Council appoint without delay a local Chief of Emergency Medical Services. He should be an outstanding medical leader and should be selected in consultation with the State Defense Council, the local Medical Society and the local Health Officer. To facilitate the integration of all local medical resources into a comprehensive program for civilian protection, the local Chief of Emergency Medical Services should be assisted by a Medical Advisory Council, consisting of the local health officer, an experienced hospital executive, representatives of the local medical society and the local nursing profession, the American Red Cross and any participating voluntary agencies.

Under the administrative authority of the local Director of Civilian Defense the duties of the local Chief of Emergency Medical Services are:

1. To determine the scope of the activities of all official and voluntary organizations which are to participate in the emergency medical program of civilian defense, to integrate these organizations into the comprehensive local program and to assist them in expanding their activities to the limit of their resources in personnel and equipment.

2. To assist hospitals in the locality to organize, equip and train Emergency Medical Field Units as outlined in Medical Division Bulletin No. 1, "Emergency Medical Service for Civilian Defense."\*

3. To inspect and select sites for the establishment of Casualty Stations.

4. To make a spot map of the locality indicating the locations of hospitals, appropriate sites for Casualty Stations, depots for storage of stretchers, blankets and collapsible cots, and the locations of rescue squads. The map should indicate the number of Emergency Medical Squads in each hospital. Copies of the map should be supplied to Control Centers, Police and Fire Departments, Health Department, local Red Cross Chapter, State Defense Council, Regional Director, Regional Medical Officer and to all cooperating hospitals.

5. To plan and establish adequate transportation service for casualties and medical personnel in consultation with local government departments, American Red Cross and voluntary agencies.

6. To arrange with the local Control Authority for field drills of Emergency Medical Units and Rescue Squads in collaboration with police and fire auxiliaries, disaster relief and canteen services of the American Red Cross, ambulance transport service and other civilian defense units and to supervise such drills.

7. To make an inventory of hospital beds in the locality and of the possibilities for emergency expansion in bed capacity.

8. To assist the authorities charged with preparing plans for evacuation in making an inventory of hospitals, convalescent homes, sanatoria, hotels and other structures within a radius of 50 to 100 miles which might be used as base hospitals to which patients in city institutions could be evacuated.

9. To assist the local Central Volunteer Bureau in establishing courses for volunteers in the field of health, medical care, nursing and related activities.

10. To stimulate recruitment of volunteers for Nurses' Aide courses of the American Red Cross, assist the local Red Cross chapter in establishing Training Centers for Volunteer Nurses' Aides at appropriate hospitals and assist the Red Cross placement bureau in placing Nurses' Aides with hospitals, clinics, health departments and field nursing services after completion of training.

11. To stimulate and guide extension of First Aid training courses as widely as possible among the local population through the American Red Cross and other official and voluntary agencies.

12. To stimulate and guide industrial plants, business establishments and government bureaus in the locality in the training and organization of effective First Aid Detachments among the employees.

13. To collaborate with state and local health departments and through them with the Regional Sanitary Engineer in a comprehensive program for the protection of the community against emergency sanitation hazards.

14. To collaborate with local and State Defense Councils, Office of Civilian Defense, Federal Security Agency, Children's Bureau and other local, state and federal authorities in the preparation of plans for evacuation, with particular attention to the medical needs of the population under such circumstances.

15. To keep the community and particularly the members of the health and medical professions and the participating official and voluntary organizations informed of the plans and activities of the local Emergency Medical Services.

The administration of sulfanilamide during pregnancy is not without danger to the baby because of the rapidly attained similarity of levels of the drug in the blood of the mother and the fetus, George P. Heckel, M.D., Rochester, N. Y., reports in *The Journal of the American Medical Association* for October 18.

This warning is based on the findings in 13 mothers who received sulfanilamide or its derivatives during pregnancy.

\*Published in the October issue of THE JOURNAL.

## COUNCILOR DISTRICT AND SOCIETY PROCEEDINGS

### COUNTY SOCIETY HONOR ROLL 1941

(SOCIETIES WHICH HAVE PAID DUES FOR ALL MEMBERS AND DATE PLACED ON HONOR ROLL)

#### HONOR ROLL

- Chariton County Medical Society, December 2, 1940.  
Montgomery County Medical Society, December 2, 1940.  
Perry County Medical Society, December 14, 1940.  
Ste. Genevieve County Medical Society, December 17, 1940.  
Howard County Medical Society, January 2, 1941.  
Camden County Medical Society, January 7, 1941.  
Andrew County Medical Society, January 9, 1941.  
Benton County Medical Society, January 28, 1941.  
Clinton County Medical Society, February 6, 1941.  
Holt County Medical Society, February 8, 1941.  
Macon County Medical Society, February 15, 1941.  
Moniteau County Medical Society, February 15, 1941.  
Mercer County Medical Society, March 12, 1941.  
Dallas-Hickory-Polk County Medical Society, April 4, 1941.  
Miller County Medical Society, April 4, 1941.  
Morgan County Medical Society, April 5, 1941.  
Johnson County Medical Society, April 11, 1941.  
Webster County Medical Society, April 22, 1941.  
DeKalb County Medical Society, April 25, 1941.  
Carter-Shannon County Medical Society, May 1, 1941.  
Pulaski County Medical Society, May 24, 1941.  
Christian County Medical Society, June 12, 1941.  
St. Francois-Iron-Madison-Washington-Reynolds County Medical Society, July 9, 1941.  
Barry County Medical Society, October 1, 1941.

## ASSOCIATE EDITORS: COUNCILORS OF THE TEN COUNCILOR DISTRICTS

### FIRST COUNCILOR DISTRICT

A. S. BRISTOW, PRINCETON, COUNCILOR  
Nodaway-Atchison-Gentry-Worth Counties  
Medical Society

The Nodaway-Atchison-Gentry-Worth Counties Medical Society held a dinner meeting at the Linville Hotel, Maryville, November 3. Dr. Samuel E. Simpson, Stanberry, president, presided.

Members present were Drs. Henry C. Bauman, Fairfax; John M. Davis, Charles H. Flynn, Claude D. Haskell and Clifton M. Waugh, Tarkio; C. T. Settle and Emmett B. Settle, Rock Port; Charles T. Bell, J. M. Boyles, Benjamin F. Byland, Hiram Day, Leslie E. Dean, W. R. Jackson and William M. Wallis, Jr., Maryville; Charles W. Kirk, Hopkins; Eugene Crowson, Pickering; Charles D. Humberd, Barnard; Samuel E. Simpson, Stanberry; Frank H. Rose, Albany, and Pren J. Ross, Grant City. Guests present were Drs. Cabray Wortley, J. F. Chiarottino and M. H. Talty, St. Joseph; W. H. Cash, Lenon, Iowa; Curtis Bland, Winter Park, Florida; John M. Waugh, Rochester, Minnesota, and Drs. Earl Baniger and Ed. A. Miller, Maryville, dentists.

Dr. Emmett B. Settle, Rock Port, of the program committee, announced that an address on "Ante Partum Hemorrhage" would be given by Dr. Ralph R. Wilson, Kansas City, at the December meeting.

Dr. Clifton M. Waugh, Tarkio, introduced his son, Dr. John M. Waugh, of the Division of Surgery and Chief of Surgical Section of the Mayo Clinic, who gave a scholarly and interesting paper on "The Management of Pelvic Tumors," and presented an instructive motion picture which demonstrated the technic of a vaginal hysterectomy. Questions and discussion followed Dr. Waugh's paper and his remarks.

B. F. BYLAND, M.D., Secretary Pro Tem.

### FIFTH COUNCILOR DISTRICT

W. A. BLOOM, FAYETTE, COUNCILOR  
Cooper County Medical Society

The Cooper County Medical Society was host to fifty-four physicians who attended a dinner and meeting of the Central Missouri Clinical Society at Hotel Frederick, Boonville, October 6, at 7:30 p. m. Physicians attended from Cooper, Howard, Boone, Audrain, Callaway, Randolph and Monroe counties.

Dr. Sara Jordan, Boston, chief of the gastrointestinal section of the Lahey Clinic, was the guest speaker and spoke on "The Management of Constipation."

The next meeting of the group will be held in Moberly. Additional meetings are scheduled to be held in Mexico, Fulton and Columbia.

J. C. TINCHER, M.D., Secretary.

### EIGHTH COUNCILOR DISTRICT

W. WALLIS SMITH, SPRINGFIELD, COUNCILOR

The Eighth Councilor District met at the Missouri State Sanatorium, Mount Vernon, October 24, for a clinic session sponsored by the Committee on Postgraduate Course of the State Medical Association.

The following program was presented:

3:00 p. m. Clinic on Obstetrics. Presented by Drs. Richard G. Helman and Kenneth E. Cox, Kansas City.

4:30 p. m. Clinic on Differential Diagnosis and Treatment of Pleurisy With Effusion. Presented by Dr. H. I. Spector, St. Louis.

6:00 p. m. Dinner at the State Sanatorium. Addresses by Dr. R. B. Denny, Creve Coeur, President of the

Association, and Dr. H. L. Kerr, Crane, President-Elect of the Association.

7:30 p. m. Scientific Session.

"Differential Diagnosis and Treatment of Pulmonary Hemorrhage," Dr. H. I. Spector, St. Louis.

"The Practical Aspects of Postpartum Hemorrhage," Dr. Richard G. Helman, Kansas City.

"The Toxemias of Pregnancy," Dr. Kenneth E. Cox, Kansas City.

The staff of the Sanatorium were hosts at the dinner.  
W. WALLIS SMITH, M.D., Councilor.

### NINTH COUNCILOR DISTRICT

E. C. BOHRER, WEST PLAINS, COUNCILOR

Carter-Shannon County Medical Society

The Carter-Shannon County Medical Society met in Van Buren, October 29, at 8:00 p. m., in the office of Dr. Thelma Buckthorpe, following a dinner.

The program consisted of a round table discussion.  
W. T. EUBY, M.D., Secretary.

### Dent County Medical Society

The Dent County Medical Society met at Salem on October 21 at 8:45 p. m. Dr. G. E. Joseph, Salem, presided.

Dr. L. L. Henson, Salem, was elected to membership by transfer from the Phelps-Crawford County Medical Society.

Dr. L. H. Hunt, Salem, opened a discussion on current medical problems.

F. E. BUTLER, M.D., Secretary.

### TENTH COUNCILOR DISTRICT

E. J. NIENSTEDT, SIKESTON, COUNCILOR

St. Francois-Iron-Madison-Washington-Reynolds County Medical Society

The St. Francois-Iron-Madison-Washington-Reynolds County Medical Society met at the St. Francois County Courthouse, Farmington, October 31, at 7:30 p. m. Dr. Van W. Taylor, Bonne Terre, president, presided.

Dr. A. W. Neilson, St. Louis, spoke on "The Five Day Treatment of Syphilis" and presented graphic charts of the patients who had received this therapy. The talk was concluded by lantern slides of various syphilitic lesions.

Members present were Drs. J. P. Yeargain, Irondale; J. W. Hunt, Leadwood; Joseph L. Thurman, Potosi; H. W. Barron, E. E. Higdon, S. C. Slaughter, Fredericktown; Reuben Appleberry, F. R. Crouch, N. W. Hawkins, C. C. Ault, Farmington; C. H. Appleberry, Flat River, and Paul L. Jones, Flat River, now Captain in the Medical Reserve Corps station at Camp Robinson, Arkansas.

C. C. AULT, M.D., Secretary.

## BOOK REVIEWS

**NECROPSY.** A Guide for Students of Anatomic Pathology. By Bela Halpert, M.D., Assistant Professor of Pathology and Bacteriology, Louisiana State University School of Medicine, etc. St. Louis: The C. V. Mosby Company. 1941.

This book is written by a pathologist who follows the methods of Anton Ghon. It develops the facts from a postmortem examination in the thorough manner which has always been characteristic of the Continental pathologic anatomist. The keynote of the descriptive mat-

ter indicates the belief of the writer in the method of exploration of viscera *in situ*, with removal of the organs followed by subsequent examination outside the body. It emphasizes the need of examination by systems.

The book is a small one, seventy-two pages in all, with three pages of index. It will be found useful to anyone who desires to venture into the field of pathologic anatomy, to-wit: students of medicine. It could hardly be called a book for advanced workers in pathology. It is, however, clearly and scientifically written and concludes with an appendix of necropsy records, including clinical histories of each case.

R. B. H. G.

**HANDBOOK OF HEARING AIDS.** By A. F. Niemoeller, A.B., M.A., B.S., Author of "The Complete Guide for the Deafened," etc. Foreword by Harold Hays, M.D., F.A.C.S., Author of "The Modern Conception of Deafness," etc. New York: The Harvest House. 1940. Price \$3.00.

A. F. Niemoeller's "Handbook of Hearing Aid" is meticulously thorough in covering the entire field on hearing aids.

The author deals impartially with the various devices, offering a logical assay of their respective values. There is much to be learned from this book. Too often one is inclined to lose interest in the deaf patient, feeling reluctantly that one can be of no help to him.

Every aurist should read this book.

R. J. P.

**HANDBOOK OF ORTHOPAEDIC SURGERY.** By Alfred Rives Shands, Jr., B.A., M.D., Medical Director of the Nemours Foundation, Wilmington, Delaware, etc. In Collaboration With Richard Beverly Raney, B.A., M.D., Associate in Orthopaedic Surgery, Duke University School of Medicine. Illustrated by Jack Bonacker Wilson. St. Louis: The C. V. Mosby Company. 1940. Price \$4.25.

This small volume gives a better than ordinary discussion of purely orthopedic subjects so that the student who has read it will have a good idea of what orthopedic surgery is and what to do for the various diseases and deformities.

Most every subject is mentioned and so represented as to leave a quite definite impression. The uncommon things are presented briefly and concisely but where concrete and more extensive discussion of the subject is needed, that is capably done.

This book is very much worth while.

C. A. S.

**ESSENTIALS OF GENERAL SURGERY.** By Wallace P. Ritchie, M.D., Clinical Assistant Professor, Department of Surgery, University of Minnesota Medical School. With 237 Illustrations. St. Louis: The C. V. Mosby Company. 1941. Price \$8.50.

The foreword and introduction of this book were written by Owen H. Wangenstein, who also sponsored the book. It is intended for the undergraduate student.

Chapter I, "A Brief History of Development of Surgery" is rather unique and interesting. Under "Egyptian Surgery" one finds information such as, "Splints have been found on the extremities of many mummies." There is also a brief description of many famous medical men. One chapter deals with anesthetics and instruments, sutures, antiseptics, administration of fluids and other miscellaneous procedures are discussed.

Technic of operations rightfully is omitted. If this book is followed by Christopher's Surgery, then indeed would its value be enhanced.

As a whole the book contains information every physician should know and it should be helpful to the student of medicine.

W. H. H.



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## WAR RATIO OF MALE TO FEMALE BIRTHS

The normal proportion of male births over female births was even greater in every European belligerent power during the last years of World War I and for perhaps two or three years afterward, *The Journal of the American Medical Association* for November 22 says in answer to an inquiry.

"The proportion of male births increased also in many of the important European neutral countries," *The Journal* continues, "including Norway, Sweden, the Netherlands and (for the year 1920) Switzerland. There was an observable rise in Australia, but not in the United States or in New Zealand, among the non-Euro-

pean belligerents. The increase in the proportion of male births, where observed, was of short duration."

As for the reasons for this increase, *The Journal* says that "A simple explanation that seems entirely adequate has not yet been offered."

## ARMY AND NAVY SEEKING 200,000 UNITS OF BLOOD PLASMA WITHIN NEXT YEAR

The surgeon generals of the Army and Navy have asked that two hundred thousand units of blood plasma (the liquid portion of the blood) be processed within the next year, the final product to be equally distributed between their two medical departments. William DeKleine, M.D., Washington, D. C., reports in a discussion of the "Red Cross Blood Procurement Project for the Army and Navy," published in the Medical Preparedness Section of *The Journal of the American Medical Association* for November 15.

Dr. DeKleine explains that the two surgeon generals last January requested the American Red Cross and the Division of Medical Sciences of the National Research Council to organize a cooperative blood collecting project for the purpose of meeting the need for a large reservoir of blood plasma as a preparedness measure for a national emergency. "The Red Cross," he says, "was asked 'to secure volunteer donors in a number of the larger cities of this country, to provide the necessary equipment, to transport the drawn blood rapidly to a processing center, and to arrange for separating the plasma and for storing the resulting product in refrigerated rooms.'"

"The medical division of the Research Council was asked 'to assume the general supervision of the professional services involved in this collection and storage of plasma and to provide competent professional personnel both for a national supervising group and for the local collecting agencies.'"

A collection unit was organized in New York City and the first blood drawn about February 1. Similar collection centers have since been established in Philadelphia, Baltimore, Buffalo and Rochester, N. Y.

The project, he explains, is an outgrowth, in part at least, of a similar project in which a quantity of liquid plasma was collected for shipment to Great Britain. The experience gained from this project leads Dr. DeKleine to believe that liquid plasma is not satisfactory for military purposes. Accordingly dried plasma is being used in the American project.

"The original request of the surgeon generals," Dr. DeKleine explains, "called for ten thousand units of dried plasma—a unit being equivalent to 250 cc. of liquid plasma dried in the container in which it is finally dispensed. This represents about the average amount of plasma recovered from one donor. The total number of units requested is therefore equivalent roughly to that many donor bleedings.

"This quota has been more than completed. Fifteen thousand donor bleedings have been collected as of August 31, of which more than fifteen thousand units have actually been processed ready for transfusion. These are now being transferred to Navy ships where the emergency need appears to be the most urgent for the present. Some of the material will also be available for civilian catastrophies in which transfusions are necessary."

He explains that the request for two hundred thousand units for the next year has been approved for immediate action and that it calls for the rapid expansion of procurement centers in several of the larger cities of the country.

"The present rate of collection at the five centers mentioned," he says, "is about one thousand bleedings a week. This rate will have to be quadrupled if the new quota is to be completed in the specified time."









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